

PhD Dissertation

THE ACQUISITION OF TENSE AND  
ASPECT IN SPANISH

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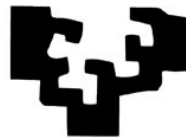
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eman ta zabal zazu



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A mis padres y hermanas,  
porque de sus palabras aprendí el lenguaje.

Y a mis sobrinos,  
que todavía lo están adquiriendo.

Y a Dani.



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## RESUMEN

La tesis que se presenta a continuación es una investigación centrada en la comprensión y el uso de las marcas verbales de tiempo y aspecto por parte de adultos y niños monolingües de castellano de 5 años.

Para su realización, en primer lugar, se han analizado cuáles son las características semánticas y pragmáticas de dichas formas y cuáles son las dificultades que supone la adquisición de las categorías de tiempo y aspecto (Capítulos 1 y 2). La adquisición de estas categorías es compleja en varios sentidos. Primero, los significados asociados a estas categorías son muy abstractos y su uso requiere una madurez cognitiva que puede ser independiente del lenguaje. En las lenguas naturales, como se puede ver en los siguientes ejemplos del castellano, la información temporal y aspectual se estructura en tres niveles: el aspecto del predicado (1), el aspecto gramatical (2) y el tiempo(3) (Comrie, 1976, 1985).

- (1) a. Fermín fue siempre muy trabajador  
b. Fermín construyó su casa cuando era joven
- (2) a. Marta estuvo enferma  
b. Marta estaba enferma
- (3) a. Miguel compró un coche con su primer sueldo  
b. Miguel está comprando un coche con su primer sueldo  
c. Miguel comprará un coche con su primer sueldo

El ASPECTO DEL PREDICADO (también llamado *aktionsart* o *aspecto léxico*) hace referencia a la constitución temporal interna de los predicados. Así pues, hay predicados que hacen referencia a situaciones son estables, que no implican cambios sino que se cumplen en cada uno de sus momentos internos (1a); en cambio, otros tipos de predicados como (1b) se refieren a eventos que no son homogéneos sino que tienen un fin intrínseco y sólo se pueden dar por finalizados cuando se llega a

un resultado final. Los predicados como los de (1a) se denominan predicados *atéllicos*, mientras los predicados como (1b) son predicados denominados predicados *téllicos*. El ASPECTO GRAMATICAL muestra la perspectiva que tiene el hablante con respecto al evento o a la situación denotada por el predicado. La principal distinción en este nivel de información temporal es el contraste entre *aspecto perfectivo* (PF) e *imperfectivo* (IPF). El aspecto perfectivo (2a) hace referencia al evento como un conjunto, mostrando su principio y su fin; el aspecto imperfectivo (2b), en cambio, se centra en partes internas del evento, por lo que los límites de evento no son visibles. Por último, la categoría gramatical del TIEMPO localiza el evento en el tiempo de una manera déictica, relacionando el evento con otros eventos o situaciones en el discurso y determinando si la situación es anterior (3a), simultánea (3b) o posterior (3c) al tiempo del habla o cualquier otro tiempo relevante en el contexto. Estos tres niveles de información están organizados de manera jerárquica. Primero, el ASPECTO DEL PREDICADO está determinado a nivel del Sintagma Verbal (SV) por los rasgos léxico-semánticos del verbo y sus argumentos y por la estructura argumental del predicado. En cambio, el ASPECTO GRAMATICAL y el TIEMPO están determinados por los complementos adverbiales, la morfología verbal y otras partículas funcionales que operan fuera del SV.

Además de la complejidad de los conceptos denotados por las categorías de tiempo y aspecto, a la hora de adquirir la lengua materna, el niño se encuentra con otra dificultad: reconocer cuáles son las unidades que codifican esta información y relacionar cada una de ellas con su significado exacto.

Por último, para adquirir las marcas de tiempo y aspecto, el niño tiene que tener en cuenta cuáles son los principios que regulan el uso de las distintas formas en el discurso. Esto es especialmente relevante en el caso de tiempo y aspecto, ya que algunos de los significados de estas categorías podrían derivarse de enriquecimientos pragmáticos y no de la configuración sintáctica del predicado o de las propiedades semánticas de determinadas formas lingüísticas. Por un lado, para el nivel del aspecto del predicado, Hay, Kennedy & Levin (1999) afirman que, en los predicados cuya telicidad depende de si los argumentos del predicado son delimitados, la telicidad no se deriva semánticamente, sino que se deriva pragmáticamente gracias a

una implicatura conversacional según la cual el argumento que delimita el evento ha sido transformado completamente. Por otro lado, en el nivel del aspecto gramatical, Olsen (1997) y Smith (1991) defienden que el significado del IPF, cuando se contrasta con el PF, puede ser enriquecido pragmáticamente dando lugar a la implicatura de que se usa el IPF porque la situación no ha finalizado (Olsen, 1997, Smith, 1991).

A pesar de las dificultades mencionadas, los niños producen marcas de tiempo y aspecto desde muy temprano, a la edad de 2-3 años (Brown, 1973; de Villiers & de Villiers, 1973 y también Hernández-Pina, 1984; Sebastián Gascón, 1990, para español; y Ezeizabarrena, 1996, para bilingües español-euskera), aunque estos marcadores se utilizan en todas las lenguas de una manera muy restrictiva: los morfemas de pasado y de PF aparecen primero con predicados télicos, mientras que los morfemas de presente e IPF aparecen primero con predicados atélicos. Ante estos patrones de producción, algunos autores han declarado en las primeras producciones la morfología temporal y aspectual no se usa para marcar distinciones tiempo o aspecto gramatical, sino que marcan el aspecto del predicado (Bronckart y Sinclair, 1973; Antinucci y Miller, 1976, entre otros). Sin embargo, los estudios de comprensión muestran que los niños con tan sólo 3 años, pueden entender las distinciones básicas de tiempo y aspecto –pasado vs. presente, PF vs IPF– independientemente del tipo de predicado y por lo tanto, utilizan las marcas de tiempo y aspecto gramatical para hacer distinciones de tiempo y aspecto gramatical, aunque su uso no es necesariamente un uso adulto. De hecho, estudios experimentales sobre la comprensión del aspecto gramatical realizados con niños de mayor edad han demostrado que los predicados télicos marcados con IPF son más difíciles de entender que los predicados télicos marcados con PF: los niños, a diferencia de los adultos, relacionan más frecuentemente los predicados télicos marcados con IPF con situaciones completas (van Hout, 2004, 2005, 2007, 2008; Kazanina y Philips, 2007) y su interpretación de las formas del pasado difiere de la de los adultos cuando el marcado pasado se refiere a situaciones incompletas (Wagner 2001, 2002). La interpretación no adulta de las marcas de IPF se ha atribuido al hecho de que, según algunos enfoques (de Swart, 1998; de Swart y

Verkuyl, 1999; Kamp y Reyle, 1993), la combinación de telicidad e IPF es semánticamente más compleja que la combinación de telicidad y PF, ya que la primera implica que el operador de IPF cambia el tipo de predicado denotado por el aspecto del predicado (van Hout, 2008). Además, la falta de comprensión adulta de los predicados télicos marcados con IPF también se ha atribuido a las dificultades de los niños para encontrar el antecedente adecuado del imperfectivo en el discurso (Kazanina y Philips, 2007; van Hout, 2005): los niños tienen dificultades para interpretar predicados télicos con marca de IPF cuando éstos están en un contexto narrativo y cuando no se hace explícito cuál es el antecedente del IPF mediante un complemento adverbial. Además, los estudios sobre la comprensión de aspecto del predicado han mostrado que algunas configuraciones semánticas son más opacas que otras a la hora de evaluar la telicidad del predicado: los niños tienen más dificultades para calcular la telicidad del predicado cuando ésta depende del objeto que cuando está determinada también por partículas de telicidad –*eat the Apple* vs. *eat the apple up*– (van Hout, 1998). Por último, estudios previos han detectado que hay diferencias en la adquisición de morfemas tiempo y aspecto dependiendo del tipo de lengua y dependiendo de las diferencias tipológicas en la configuración morfosintáctica de las marcas de tiempo y aspecto en dichas lenguas (Hollebrandse et al, 2010; Van Hout, 2008; van Hout et al, 2010; Weist et al, 1984; Weist et al, 1991).

Teniendo en cuenta los antecedentes mencionados, esta tesis ha querido responder a las siguientes preguntas de investigación:

1) ¿Son capaces los niños de 5 años de edad de distinguir las marcas de aspecto del predicado, de aspecto gramatical y de tiempo de una lengua como el español, con un paradigma verbal temporal-aspectual tan complejo?

2) ¿Afectan los siguientes factores a la interpretación y el uso de las marcas de tiempo y aspecto?

a) La complejidad morfológica y el grado de polisemia de las formas;

b) El tipo de aspecto del predicado;



c) El contexto del discurso: si hay un contexto narrativo o si el predicado se da sin contexto, y sin modificación adverbial que haga explícito cuál es el TRef;

d) El tipo de tarea: comprensión vs. producción; tarea de juicios de verdad vs. tarea de selección de imágenes.

3) ¿Afectan estos factores de la misma manera a los adultos y niños de 5 años de edad?

Para responder a estas preguntas se han diseñado tres tipos de materiales experimentales, que se han usado para cinco tareas distintas:

- EXPERIMENTO DE TIEMPO: consiste en una tarea de comprensión en la que los participantes tienen que relacionar las marcas de pasado, presente y futuro con escenas mostradas en un vídeo y una tarea de producción en la que los participantes tienen que completar oraciones usando la morfología temporal para referirse a situaciones pasadas, presentes y futuras (capítulo 3).
- EXPERIMENTO DE ASPECTO-SELECCIÓN DE IMAGEN: consiste en una tarea de selección de imágenes para poner a prueba la comprensión del pasado PF vs IPF con predicados télicos en dos situaciones discursivas: en una narración y fuera de contexto (capítulos 4 y 7)
- EXPERIMENTO DE ASPECTO-PELÍCULAS: consiste en una tarea de juicios de verdad en la que los participantes, tras ver unos pequeños vídeos en los que se muestran acciones completas e incompletas, tienen que valorar la pertinencia del uso de oraciones PF vs IPF con predicados télicos (capítulos 5, 6 y 7) y una tarea de producción en la que los participantes tienen que completar oraciones usando la morfología de aspecto –PF e IPF– para describir situaciones completas e incompletas (capítulos 6 y 7).

Un total de 94 (niños y adultos) hablantes de español L1 participaron en el estudio: 64 niños de cinco años de edad y 30 adultos como sujetos control. Los participantes se distribuyeron en dos grupos: uno realizó el EXPERIMENTO DE ASPECTO-

SELECCIÓN DE IMAGEN y otro el EXPERIMENTO DE TIEMPO y el EXPERIMENTO DE ASPECTO-PELÍCULAS. Los niños tenían 5 años de edad.

La principal aportación de esta investigación es el estudio del conocimiento que tienen los niños de cinco años de las marcas de tiempo y aspecto

A) en español, una lengua que tiene una morfología verbal muy rica y cuyo uso aún no ha sido testado exhaustivamente mediante métodos experimentales,

B) teniendo en cuenta la distinta complejidad morfológica del paradigma verbal y analizando tanto formas sintéticas como perifrásticas,

C) estudiando cada uno de los niveles de información por separado (tiempo, aspecto gramatical y aspecto del predicado)

D) con una metodología experimental variada, que incluye tanto estudios de comprensión como de producción y con distintos tipos de tareas.

El estudio llevado a cabo en esta tesis nos ha permitido ver que los principales niveles de marcación temporal (tiempo, aspecto gramatical y aspecto del predicado) son también categorías independientes en el lenguaje infantil. Además, hemos podido constatar que:

1. Con respecto a la categoría gramatical de TIEMPO, los 5 años de edad los niños pueden distinguir las marcas de pasado, presente y futuro y son capaces de utilizarlas de manera adecuada.

2. Con respecto al nivel ASPECTO GRAMATICAL, a la edad de 5 años los niños ya han adquirido la semántica básica de las formas y distinguen las marcas de PF e IPF, pero su respuesta no es similar a la adulta en algunas tareas debido a que:

a. no han adquirido aún los usos pragmáticos del IPF, es decir, no generan las implicaturas de escala asociadas al IPF

b. tienen dificultades a la hora de identificar la referencia temporal del IPF, en determinadas contextos en los que la falta de un modificador adverbial deja demasiadas opciones de referencia para el IPF.

3. Con respecto al nivel del ASPECTO DEL PREDICADO, los niños en la edad de 5 años todavía tienen problemas en identificar como télicos los predicados de tema incremental, dado que la telicidad con estos predicados depende del objeto y es generada pragmáticamente por una implicatura conversacional.

Además, gracias a que se han estudiado diferentes formas verbales, hemos podido constatar que, aunque los niños de 5 años de edad muestran en producción una preferencia por las formas perifrásticas, la relativa complejidad morfológica y el grado de polisemia de las diferentes formas no afecta a la comprensión de las marcas de tiempo y aspecto, al menos a esta edad.



# LABURPENA

Tesi honek lehen hizkuntza gaztelania duten heldu eta bost urteko haurren denbora (aldia) eta aspektuaren marken ekoizpena eta ulermena du ikergai.

Horretarako, lehenik eta behin, marka horien ezaugarri semantiko eta pragmatikoak aztertu dira, eta baita denbora eta aspektu kategorien ezagutza bereganatzeak duen zailtasuna ere (1. eta 2. Kapitulua). Kategoría hauek izaera konplexua dute hainbat mailatan, kontuan hartu beharrekoa, hizkuntzaren bereganatze goiztiarra azaltzeko garaian. Hasteko, kategoría horiei dagozkien esanahiak oso abstraktuak dira, eta haien erabilera egokiak hizkuntza gaitasunaz apartekoa den heldutasun kognitiboa eskatzen du. Beheragoko gaztelaniako adibideetan ikus daitekeen bezala, hizkuntza naturaletan denbora eta aspektuari dagokion informazioa hiru mailatan antolatzen da: predikatuaren aspektua (1), aspektu gramatikala (2) eta denbora (3) (Comrie, 1976, 1985).

- (1) a. Fermín fue siempre muy trabajador  
‘Fermin langilea izan zen beti’  
b. Fermín construyó su casa cuando era joven  
‘Ferminek etxea eraiki zuen gaztetan’
- (2) a. Marta estuvo enferma  
‘Marta gaixo egon zen’  
b. Marta estaba enferma  
‘Marta gaixo zegoen’
- (3) a. Miguel compró un coche con su primer sueldo  
‘Miguelen kotxe bat erosi zuen aurreneko soldatarekin’  
b. Miguel está comprando un coche con su primer sueldo  
‘Miguelen kotxe bat erosten ari da aurreneko soldatarekin’  
c. Miguel comprará un coche con su primer sueldo  
‘Miguelen kotxe bat erosiko du bere aurreneko soldatarekin’

PREDIKATUAREN ASPEKTUAK (*aktionsart* edo *aspektu lexikoa* ere deitua) predikatuen denbora-egiturarekin du zerikusia. Hala, predikatu batzuek egongokorrak diren egoerak adierazten dituzte, alegia, beren barne momentu bakoitzean, aldaketarik gabe, etengabe, gertatzen ari direnak (1a); aldiz, (1b) bezalako predikatuek homogeenak ez diren gertaerak adierazten dituzte, berezko amaiera puntua dutenak eta azken emaitza edo helmugara iritsitakoan bakarrik burututzat har

daitezkeenak. (1a) bezalako predikatuei *atoliko* esan ohi zaie, eta (1b) bezalakoei predikatu *telikoak*. ASPEKTU GRAMATIKALAK hiztunak gertaeraren aurrean edota predikatuak denotatutako egoeraren aurrean duen perspektiba erakusten du. Denbora-informazio maila horretan bereizi egiten dira aspektu *burutu* (edo perfektibo PF) eta *ez-burutua* (edo imperfektibo IPF). Aspektu burutuak (2a) gertaera, multzo bezala du aipagai, hasiera eta amiera barne; aspektu ez-burutuak (2b), berriz, gertaeraren barne atalak adierazten ditu eta, horregatik, gertaeraren mugak ez dira ikuserrazak izaten. Azkenik, DENBORA kategoria gramatikalak deiktikoki kokatzen du gertaera denboran, gertaera beste gertaera batzuekin edota diskurtsoko egoerekin erlazionantzen du, eta zehazten du gertaera hori hizketa momentuaren zein testuinguruko beste edozein denbora garrantzizkoaren aurrekoa (3a), aldi-berekoa (3b) edo ondorengoa (3c) den. Hiru informazio-maila horiek hierarkikoki daude antolatuta. Aurrena, PREDIKATUAREN ASPEKTUA aditz sintagma mailan zehazten da, aditzaren tasun lexiko-semantikoek, argumentuek eta predikatuaren argumentu-egiturak zehazten dute. ASPEKTU GRAMATIKALA eta DENBORA, aldiz, osagarri adberbialek, aditz morfologiak eta aditz sintagmaz kanpo eragina duten beste partikula funtzional batzuek zehazten dituzte.

Bestalde, denborak eta aspektuak kategoria bezala denotatzen dituzten kontzeptuen konplexutasunaz gain, haurrak beste zailtasun batekin egiten du topo hizkuntza bereganatzeko garaian: informazio konplexu hori kodetzen duten hizkuntza unitateak antzematearena eta ondoren unitate bakoitzari unean uneko esanahi zehatzarekin lotzen ikastearena.

Azkenik, denbora eta aspektu marken ezagutza osatu eta burutu ahal izateko haurrak hizkuntza forma ugariak diskurtsuan egoki nola erabili arautzen duten hatsarre edo printzipioak hartu behar ditu kontuan. Hori bereziki nabarmentzekoa da denbora eta aspektuari dagokionean, izan ere kategoria horiei dagozkien zenbait hizkuntza formaren esanahietako batzuk aberaste pragmatikoaren ondorioz eratorritakoak izan baitaitezke, predikatuaren konfigurazio sintaktikoaren edo predikatuaren ezaugarri semantikoen ondoriozkoak izan ordez. Alde batetik, predikatuaren aspektuari dagokionez, Hay, Kennedy & Levin-ek (1999) diotenez predikatuaren argumentuak zehatzak diren, horren araberako telikotasuna duten predikatuetan telikotasuna ez da

semantikoki eratortzen pragmatikoki baizik, non elkarrizketako inplikatura bati esker gertaera zehazten duen argumentua zeharo eraldatu den. Bestalde, aspektu gramatikalaren mailan, Olsen-ek (1997) y Smith-ek (1991) diote ez-burutuaren (IPF) esanahia, burutuarekin (PF) kontrajarritakoan pragmatikoki aberastu daitekeela eta, ondorioz sortzen da honako inplikatura, hots, IPF erabiltzea gertaera amaitu ez delako (Olsen, 1997, Smith, 1991).

Aipatutako zailtasunak izan arren, denbora eta aspektu markak oso txikitatik hasten dira ekoizten haurrak, 2 edo 3 urterekin (Brown, 1973; de Villiers & de Villiers, 1973; Hernández-Pina, 1984; Sebastián Gascón 1990 gaztelaniarako; Ezeizabarrena, 1996, gaztelania-euskara elebidunetarako). Halere, marka horien ekoizpen goiztiarra oso mugatua da. Hizkuntza askotako ikerketek erakutsi duten bezala, lehenaldiko eta PF morfemak hasierako ekoizpenetan predikatu telikoekin ageri ohi dira, orainaldiko eta IPF morfemadun formak hasieran predikatu atelikoekin ageri ohi ziren bezalaxe. Ekoizpen patroik horiek ikusita, ikertzaile batzuek ondorioztatu dute haurren hasierako ekoizpenetan denbora eta aspektuaren morfologia markak ez direla denbora edo aspektu bereizketak adierazteko, predikatuaren aspektua adierazteko baizik (Bronckart y Sinclair, 1973; Antinucci y Miller, 1976, besteak beste). Halere, ulermen goiztiarra aztertutako ikerketek erakutsi dute 3 urteko haurrak gauza direla denbora eta aspektu aldeak ulertzeko –lehenaldia vs. orainaldia, PF vs. IPF- berdin predikatu mota zein den, eta, beraz, gai direla denbora eta aspektu gramatikaleko markak erabiltzeko, marka horien erabilera helduenen berdin-berdina ez badute ere. Ildo horretan, haur koskorragoekin egindako aspektu gramatikalaren ulermenari buruzko ikerketa esperimentalek erakutsi dute IPF markadun predikatu atelikoak zailagoak direla ulertzeko PF markadun predikatu telikoak baino. Izan ere, haurrek –helduek ez bezala- nahiago izaten dute IPF markatutako predikatu telikoak burututako gertaerekin lotzea (van Hout, 2004, 2005, 2007, 2008; Kazanina y Philips, 2007), eta haurren lehenaldiko formak ulertzeko modua ere bestelakoa da –helduenekin alderatuta- lehenaldiko markak amaitu gabeko gertaerei dagozkienean (Wagner 2001, 2002). Zenbaiten usterako (de Swart, 1998; de Swart y Verkuyl, 1999; Kamp y Reyle, 1993), haurrek IPF helduek ez bezala interpretatzearen arrazoia da telizitatea eta IPFren arteko konbinaketa semantikoki konplexuagoa izatea telizitatea

eta PFren artekoa baino, aurreneko kasuan IPF operatzaileak predikatuaren aspektuak denotatutako aspektua aldatzea eskatzen baitu (van Hout, 2008). Bestalde, hurrek IPF markadun predikatu telikoak helduek bezala ez ulertzearen beste azalpen bat ere proposatu izan da, hain zuzen, hurrek IPFren aurrekaria diskurtsoan aurkitzeko zailtasunak dituztela (Kazanina y Philips, 2007; van Hout, 2005): hurrek zailtasunak dituzte IPF markadun predikatu telikoak testuinguru narratibo batean kokatzen direnean, eta IPFaren aurrekaria osagarri adberbialen batek esplizito egiten ez duenetan. Gainera, predikatuaren aspektuaren ulermenari buruzko ikerketek erakutsi dute konfigurazio semantiko batzuk beste batzuk baino ilunagoak direla predikatuaren telikotasuna neurtzeko garaian, eta hartara, hurrei gehiago kostatzen zaiela predikatuaren telikotasuna kalkulatzeko telikotasuna objektuaren arabera denean, telikotasuna objektua eta partikula telikoa egotearen (*eat an apple* vs. *eat an apple up*) arabera denean baino (van Hout, 1998). Amaitzeko, beste ikerketa batzuek erakutsi dute aldeak daudela denbora eta aspektuaren morfemen garapenean hizkuntza batetik bestera, hizkuntzek denbora eta aspektu markaketari dagokionez duten konfigurazio-motaren arabera (Hollebrandse et al, 2010; Van Hout, 2008; van Hout et al, 2010; Weist et al. 1984 eta Weist et al, 1991).

Aipatutako aurrekariak kontuan izanda, tesi honek ondorengo ikerketa-galderei erantzun nahi izan die :

1) Gai al dira 5 urteko haurrak predikatuaren aspektuaren, aspektu gramatikaren eta denboraren markak bereizteko, gaztelaniak bezalako aditz paradigma konplexua duen hizkuntza bat bereganatzeko garaian?

2) Ba al dute eraginik ondorengo faktoreek denbora eta aspektu marken interpretazioan eta erabileran?

a) konplexutasun morfologikoak eta formen polisemiak;

b) predikatuaren aspektu-motak;



c) diskurtsoaren testuinguak, alegia, testuinguru narratibo bat izateak edo predikatua testuinguru gabe edota Erreferentzia Denbora esplizito egin dezakeen aditzlagun adberbialik gabe?

d) eginkizun motak, alegia, ekoizpen edo ulermen ariketa baten bidez neurtu, egitasun juzku ariketa baten bidez edota irudi hautaketa bidezko ariketa bat egin?

3) Aurreko faktoreok berdin eragiten al dute bost urteko haurren eta helduen jokabidean?

Galdera horiei erantzun ahal izateko hiru material experimental multzo diseinatu dira bost ariketa mota desberdinetarako erabili direnak:

- DENBORAREN ESPERIMENTUA: ulermena aztertzeke ariketaren atalean partehartzaileek lehenaldiko, orainaldiko eta etorkizun hurbileko formak erlazionatu behar dituzte bideo-eszena labur batzuekin, eta ekoizpen atalean, ikusitako gertaerak deskribatzen dituzten esaldi osatu gabeak osatu behar dituzte, horretarako lehenaldia, orainaldia eta etorkizuna adierazten duten aditz jokatuak baliatuz (3. Kapituluak).
- ASPEKTUA TESTATZEKO IRUDI-HAUTAKETAKO ESPERIMENTUA: PF eta IPF markadun lehenaldiko adizkiak dituzten predikatuen ulermena neurtzeke ariketa da, eta entzundakoarekin bat datorrena hobeto adierazten duen irudia (biren artetik) aukeratzean datza. Predikatu telikoak bi egoera diskurtsibotan testatu dira: narrazio baten testuinguruan eta narraziorik gabekoan (4. eta 7. Kapituluak).
- ASPEKTUA TESTATZEKO FILMEN ESPERIMENTUA: bi atal dituen ariketa honetan, lehengo atala egitasun juzku ariketa bat da, bertan partehartzaileek burututako edota burutugabeko gertaerak biltzen dituzten bideo labur batzuk ikusi ondoren erabaki behar dute gertatutakoa deskribatzen duen pertsonaiak esandakoa egia den. Pertsonaiak predikatu telikodun esaldiak esaten ditu, batzuetan PF markadunak eta besteetan IPF markadunak (5., 6. eta 7. Kapituluak) eta, ondoren, ekoizpena aztertzeke atalean partehartzaileek osatu gabeko esaldiak amaitu behar dituzte –PF eta IPF markadun aditzak

baliatuaz– bideoetan burututa eta burutu gabe gelditutako egoerak deskribatzeko (6. eta 7. atala).

Guztira 94 (haur eta heldu) partehartzailereren datuak jaso eta aztertu ditugu, denak gaztelania lehen hizkuntza zutenak: 64 haur, 5na urtekoak eta 30 heldu, kontrol legez. Partehartzaileak bi taldetan banatu ziren: talde batek aspektua neurtzeko irudi hautaketaren esperimentua egin zuten, beste batek denbora eta aspektua testatzeko filmena.

Tesi honen ekarpen nagusia bost urteko haurrek duten ASPEKTU eta DENBORA marken ezagutza bereziaren ikasketa izan da:

- a. gaztelaniaz, aditz morfología aberatsa duena markaketa hauei dagokienean, eta haien erabilera esperimentalki oraindik oso gutxi aztertua izan dena.
- b. iragana adierazteko dauden forma trinko eta perifrastikoak, konplexutasun desberdineko bi paradigmak kontuan izanda
- c. informazio maila bakoitza bereiztuta (denbora, aspektu gramatikala, predikatuaren aspektua
- d. metodologia esperimental anitza baliatuta: ekoizpena zein ulermena neurtzeko ariketak eta ariketa anitzak bakoitzerako.

Tesi honetan garatutako ikerketak aukera eman du erakusteko denbora markaketaren maila nagusiak (denbora (aldia), aspektu gramatikala eta predikatuaren aspektua) berebiziko kategoriak direla baita haurren hizkuntza garapenean ere. Bestalde, ondorengoak ere egiaztatu ahal izan ditugu:

1. DENBORARI dagokionean, 5 urteko haurrak gai dira orainaldia, lehenaldia eta etorkizuna adierazteko hizkuntza baliabideak era egokian erabiltzeko.
2. ASPEKTU GRAMATIKALARI dagokionean, 5 urteko haurrek garatua dute jada formen oinarriko semantika eta baita burutu (PF) eta ez-burutu (IPF) marken arteko aldearen ezagutza ere, marka hauen erabilera oraindik erabat helduen berdina ez bada ere:

- IPFrekin lotutako eskala inplikaturak eratzeko gaitasuna, alegia helduek bezalako IPFren erabilera pragmatikoaren arauak, oraindik erabat garatu ez dutelako.
- zenbait egoeratan, non IPFren denbora erreferentzia denbora erreferentzia aukerak anitzak diren adberbio bat egon ezean.

3. PREDIKATUAREN ASPEKTUAri dagokionean, 5 urteko haurrek zailtasunak dituzte oraindik telikotzat identifikatzeko goranzko tema (*incremental theme*)-dun predikatuen kasuan, telikotasuna, kasu horietan objektuaren menpe baitago, eta haren gainean eraikitako konbertsazio inplikaturarenean.

Amaitzeko, predikatu beretsuen forma anitzen ikerketaren ondorioz aukera izan dugu egiaztatzeko 5 urteko haurrek duten joera forma perifrastikoak nahiago izateko trinkoen aldean. Halere, ez dirudi konplexutasun morfologikoak, ez polisemia mailak ere, eraginik duenik aspektua eta denboraren ulermenean adin horretan.



## LIST OF ABBREVIATIONS

[+/- SQA]	Feature that specifies whether a NP is quantized or not
[+/-ADD TO]	Feature that specifies whether a verb is incremental or not
1SG/3SG	first/third person singular
a.o.	among others
ACC	accusative case
AspP	Aspectual Phrase
C <sub>eh</sub>	coercion operator that shifts a telic event <i>e</i> into an activity <i>b</i>
C <sub>he</sub>	coercion operator that shifts an activity <i>b</i> into a telic event <i>e</i>
CI	complete vs. incomplete condition
CO	complete vs. ongoing condition
DAT	dative case
DP	Determiner Phrase
DRT	Discourse Representation Theory
<i>e</i>	event, telic event
e.g.	example given
EvT	event time
F	femenin
FUT	Future
GER	gerund
<i>b</i>	homogeneous event, activity
I	Interval
Inf	infinitive
InitP	Initiation Phrase (equivalent to vP)
IPF	imperfective
IR	informativity ratio
L1	first language
LCS	Lexical Conceptual Structure
Neg	negations
NP	Noun Phrase
OI	ongoing vs. incomplete condition
P, p	predicate
PAS	Past
Per.Pro	Perífrasis prospectiva / Prospective periphrasis
PF	perfective
PP	past participle
PrepP	Prepositional Phrase
PRES	present
Pret.Imp	Pretérito Imperfecto
ProcP	Process Phrase
PROG	progressive
PRON	pronoun

RefT, R	reference time
ResP	Result Phrase
RI	root infinitives
<i>s</i>	state
SD	standard deviation
ST, S, <i>t<sub>0</sub>, n, n</i>	Speech time, utterance time
<i>t</i>	Time point/ time interval
T&A	tense and aspect
TP	Tense Phrase
TR	training
vP	Little v Phrase
VP	verbal phrase
<i>x, y</i>	verb arguments
XN	extended-now interval

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## INTRODUCTION

One of the main challenges when acquiring a language is to determine what the association between forms and meanings is in the specific language the child is acquiring. This process implies parsing the input to recognize the basic units in the language and relating them to their exact meaning. This task is especially complicated in the case of tense and aspect.

First, determining the form-to-meaning associations of tense and aspect marking in a language requires dealing with very abstract meanings. Temporal information of events in language is conveyed at three different levels: predicational aspect, grammatical aspect and tense (Comrie, 1976, 1985). PREDICATIONAL ASPECT (also named *Aktionsart*, *situation types* or *lexical aspect*) is related to the temporal constituency of events. One important distinction at this level of aspect is the distinction between telic and atelic predicates: telic predicates refer to events that have an intrinsic endpoint; on the contrary, atelic predicates do not denote an intrinsic endpoint. Telicity can be derived semantically by the existence of a result state that delimits the event but it can also be pragmatically derived by the presence of a bounded argument that delimits the event. GRAMMATICAL ASPECT is concerned with the speaker's perspective on the events or situations. The main distinction within this level of aspect is the contrast between perfective (PF), that makes reference to the whole event, including its endpoints, and imperfective (IPF), which focuses just on an internal subpart of the event. Finally, TENSE locates the event in time by temporally relating the event to other events or situations in the discourse and by determining how remote the event is with respect to the present time of speaking or to some other past or future time. By the use of tense marking, speakers can distinguish past, present and future events. PREDICATIONAL ASPECT is determined within the VP, by the inherent lexical

semantic features of the verb and the argument structure of the predicate, whereas GRAMMATICAL ASPECT and TENSE are determined by adverbs and functional morphology and are specified at a higher syntactic level outside the VP. Although all the distinctions mentioned –completion, precedence, etc– may be expressed differently across languages, their recognition and use require a cognitive maturity which may be independent of language.

The second challenge that the child encounters when acquiring tense and aspect is how to parse the input in order to identify the relevant linguistic units that convey tense and aspect information and relate them to their abstract and specific meanings. Although the three levels of temporal information – PREDICATIONAL ASPECT, GRAMMATICAL ASPECT and TENSE– are distinct and hierarchically organized in language, sometimes it is not easy (even for linguists) to determine at which level of temporal information a certain marking is functioning. On the one hand, some forms encode content that corresponds to two different levels (i.e. some slavic prefixes entail completion, which is determined both at the level of predicational aspect –telicity– and at the level of grammatical aspect –perfectivity–) and it is not easy to determine which is the level of temporal information that a certain form is contributing to. Additionally, there is no agreement in linguistic theory on the exact function of grammatical aspect. Two main approaches can be distinguished. On the one hand, interval-based approaches (Borik, 2002; Comrie, 1976; Demirdache & Uribe-Etxebarria, 1997, 2000, 2005; Klein, 1994, 1995; Smith, 1991) establish a parallelism between tense and grammatical aspect: they are both devoted to the temporal location of the event by ordering the event as previous, simultaneous or posterior to some times in the discourse, independently of the kind of predicate they are modifying. On the other hand, event-based approaches (de Swart, 1998, de Swart and Verkuyl, 1999, Kamp and Reyle, 1993) claim that the temporal location of the event is dependent on the kind of predicate –atelic predicates typically establish simultaneous relations while telic predicates move the narration forward– and that the characteristics of the predicate are determined by the modifications that

grammatical aspectual morphology impose on the basic eventuality denoted by predicational aspect. Therefore, identifying the units that convey tense and aspect meanings and the exact function of such units is not an easy task.

Finally, the child also has to be aware of the principles that regulate the use of the different forms in the discourse. This is especially important in the case of tense and aspect, since some of the tense, grammatical aspect and predicational aspect meanings might be derived from pragmatic enrichments rather than by the syntax and semantics of the linguistic form. For example, Hay, Kennedy & Levin (1999) claimed that in some predicates telicity is not lexically specified but is derived from a pragmatic implicature. Similarly, Olsen (1997) and Smith (1997) claim that the meaning of IPF, when contrasted to the PF, is enriched with the implicature that completion was not reached (Olsen, 1997, Smith, 1991).

In spite of the difficulties mentioned, children start producing tense and aspect (T&A) marking by the age of 2 (Brown, 1973; de Villiers & de Villiers, 1973; Gathercole et al. 2002, Hernández-Pina, 1984, Sebastián et al. 2004, for Spanish and Ezeizabarrena, 1996, for bilingual Spanish-Basque) though these markers are used crosslinguistically in a very restrictive way: past and perfective morphemes appear first with telic predicates, and present and imperfective morphemes are first attached to atelic predicates. Hence, these first uses of tense and grammatical aspect are claimed to mark predicational aspect rather than grammatical aspect or tense (Bronckart & Sinclair, 1973; Antinucci & Miller, 1976, a.o.). Yet, comprehension studies show that children, as young as 3, can understand the basic distinctions of tense and aspect –past vs. present, PF vs. IPF– independently of the kind of predicates and thus, they use tense and aspect to establish tense and aspect distinctions, though not necessarily adult-like (Weist et al., 1991, 1984). First, experimental studies on the comprehension of grammatical aspect conducted with older children have shown that imperfective telic predicates are more difficult to understand than perfective telic predicates since children, unlike adults, accept

IPF telic predicates for complete situations (van Hout, 2004, 2005, 2007, 2008; Kazanina & Philips, 2007) and their interpretation of past forms is not adult-like when the past marking refers to incomplete situations (Wagner 2001, 2002). Children's non adult-like interpretation of IPF has been attributed to the semantic complexity that results from the combination of imperfectivity and telicity, which, according to event-based approaches (de Swart, 1998, de Swart and Verkuyl, 1999, Kamp and Reyle, 1993, van Hout, 2008), involves aspect shift or coercion (Kazanina and Philips, 2007). Additionally, children's misunderstanding of telic imperfective predicates has been also attributed to children's difficulties finding the proper antecedent of the imperfective in the discourse (van Hout, 1998, 2005).

Furthermore, studies on the comprehension of predicational aspect have shown that some semantic configurations are more opaque than others for assessing telicity. In fact, telicity seems to be more difficult to compute when it depends on the object than when it depends on particles (Hollebrandse et al., 2010). Finally, previous studies have detected crosslinguistic differences in the acquisition of tense and aspect morphemes, probably related to typological differences in the morphosyntactic configuration of tense and aspect marking (Noveck, 2000, van Hout, 2008, van Hout et al., 2010a, Weist et al., 1991, Weist et al., 1984).

In this dissertation three different experiments (using the same kind of experimental materials) and five different procedures have been carried out with the aim to test L1 adults' and children's comprehension and production of tense and grammatical aspect marking:

- The TENSE MOVIES EXPERIMENT consists of a sentence-to-situation matching task testing the comprehension of past, present and future IPF tenses and a sentence completion task testing the production of temporal morphology referring to past, present and future situations (chapter 3).

- The ASPECT CURTAINS EXPERIMENT consists of a picture-selection task to test the comprehension of past PF vs. IPF telic predicates in a narrative and in an out-of-the-blue context (chapters 4 & 7)
- The ASPECT MOVIES EXPERIMENT consists of a truth-value judgment task testing the comprehension of past PF vs. IPF telic predicates (chapters 5, 6 & 7) and a sentence completion task testing the production of past PF and IPF (chapters 6 & 7).

A total of 94 (children and adults) L1 speakers of Spanish participated in the study: 64 five-year-olds and 30 adults as controls, distributed in different groups across tasks. 5 is the age at which language studies in other domains of language show that most of the morphology, syntax and semantics are already acquired but there are some other areas of language that children do not master yet, such as pragmatics (Papafragou and Musolino, 2003, van Hout, 2005). Additionally, studies on the acquisition of tense and aspect have shown that children's performance with tense and aspect distinctions improves at this age, but there are still non target-like responses (van Hout, 2007a, 2008, 2010a, Wagner, 2001, Wagner, 2002).

Taking into account the aforementioned antecedents, this dissertation aims to answer the following research questions:

- 1) Do 5 year-old children distinguish predicational aspect and grammatical aspect in a language with a rich temporal-aspectual verbal paradigm like Spanish?
- 2) Do the following factors affect the interpretation and use of tense and grammatical aspect marking?
  - a) The morphological complexity and the degree of polysemy of the forms;
  - b) The nature of the predicational aspect of the predicate;

- c) The discourse context: whether there is narrative context, or the sentence is given out-of-the-blue; and whether an explicit Reference Time RefT is given;
  - d) The kind of task: production versus comprehension; truth-value judgment versus picture selection.
- 3) Do these factors affect adults and 5-year old children in the same way?

With respect to the research questions mentioned above, we formulated the following predictions:

PREDICTION 1: tense

All the children participating in the study are 5-year-olds and, consequently, we expect them to have already acquired tense and to properly understand the basic distinctions at this level: past vs. present vs. future.

PREDICTION 2: grammatical aspect

At the level of grammatical aspect, we expect 5-year-old children to be aware of the differences between PF and IPF aspect, namely that PF telic predicates entail completion whereas telic IPF predicates do not. Additionally, as according to the literature the IPF is acquired later than the PF, we predict that, in the case of differences between adults' and children's responses, they will appear with the IPF rather than with the PF.

PREDICTION 3: morphological complexity and degree of polysemy of the forms

Differences in the semantics of tense and grammatical aspect encoding –some languages establish more transparent relations between form and meaning (one-to-one relations) than others– are claimed to affect children's acquisition of tense and grammatical aspect markers (Hollebrandse et al., 2010, Slobin, 1973). Spanish has a wide range of tense and aspect forms. In the ASPECT MOVIES EXPERIMENT in chapters 4 and 5 and the TENSE MOVIES



EXPERIMENT in chapter 3 both synthetic and periphrastic forms were tested. In synthetic forms, tense and aspect information is conflated in the same morpheme. In periphrastic forms, aspectual information is marked by a different morphological marker in the participle while tense is conveyed by a morpheme attached to the auxiliary. Following Slobin's (2010) Unifunctionality Principle, according to which children favour one-to-one form-to-meaning mappings, we expect a more adult-like performance with periphrastic forms than with synthetic forms. Additionally, synthetic and periphrastic forms also contrast in their degree of polysemy: synthetic forms such as the *pretérito imperfecto* tend to carry more than one meaning –i.e. progressive, habitual and continuous meaning– while periphrastic forms, as in the case of the *Progresivo pasado* tend to carry only one meaning –i.e. progressive–. Additionally, according to the Informativeness hypothesis (Ramchand, 2008), that claims that the polysemy of a form slows down its acquisition process, we expect a more adult-like performance with IPF periphrastic forms than with IPF synthetic forms since.

#### PREDICTION 4: the nature of the predicational aspect

According to the literature, children have more difficulties in attaining telicity when it depends on the object (van Hout, 1998). In the ASPECT MOVIES EXPERIMENT, change-of-state and incremental-theme predicates are tested. Telicity in incremental- theme predicates is dependent on the object, while telicity in change-of-state predicates is dependent on the existence of a result phrase (van Hout, 2005). Therefore, if there are differences between adults and children, these should appear with incremental-theme predicates and not with change-of-state predicates (whose telicity is dependent on the result phrase).

#### PREDICTIONS 5: semantic complexity vs. discourse integration

Children's non-adult-like understanding of telic IPF predicates has been attributed in the literature, (a) to difficulties at the semantic level in applying

the semantic shift of the telic predicate into an homogenous predicate, as imposed by the IPF (van Hout, 2007a), and (b) to difficulties at the discourse level in establishing the proper anaphoric temporal reference for the IPF (van Hout, 2007b, 2008).

If (a) holds we expect children to have difficulties with IPF telic predicates, independently of the task.

If (b) holds we expected to find difficulties with IPF morphology only when these forms are in a narrative setting and no RefT is made explicit in the discourse (i.e. in the narrative setting but not in the out-of-the-blue setting of the ASPECT CURTAINS EXPERIMENT nor in the ASPECT MOVIES EXPERIMENT).

#### PREDICTION 6: the kind of task

Different tasks have been carried out to test children's knowledge of tense and aspect in different modalities and with different methods. We hypothesize that different tasks involve different kinds of reasoning: truth-value judgment, like the one used in the ASPECT MOVIES EXPERIMENT in chapter 5, induces purely semantic reasoning whereas picture-selection, like the one used in the ASPECT CURTAINS EXPERIMENT in chapter 4, and elicited production, like the one used in the ASPECT MOVIES EXPERIMENT in chapter 6, involve pragmatic reasoning. We predict that divergences between children and adults will appear only in the tasks that involve pragmatic reasoning: in the picture-selection and elicited-production task.

This dissertation is organized as follows. Chapters 1 and 2 present the theoretical background of the study. Chapter 1 provides an overview of the different theoretical approaches to the semantics and pragmatics of predicational aspect, grammatical aspect and tense, by explaining, comparing and contrasting the different approaches to the study of these categories. Chapter 2 presents the main findings in the field of study of first language

acquisition with respect to tense and aspect, both in early spontaneous speech and in experimental studies.

Chapters 3-7 present the experimental studies in the structure of stand-alone articles with their own introduction, background, research questions, methodology, results, discussion and conclusions. In chapter 3 the TENSE MOVIES EXPERIMENT is presented, a study testing the comprehension and production of Spanish past, present and future IPF atelic predicates. This experiment is aimed at testing predictions 1 and 3. Chapter 4 presents the ASPECT CURTAINS EXPERIMENT, which is aimed at testing predictions 2, 5 and 6. Chapter 4 presents the comprehension data of the ASPECT MOVIES EXPERIMENT, which tests predictions 2, 3 and 4. The production data of this experiment are presented in chapter 6, which tests whether predictions 2 and 3 also hold for production. Finally, chapter 7 compares the comprehension of Spanish synthetic forms, by comparing the data of the ASPECT CURTAINS EXPERIMENT and the comprehension and production data of the ASPECT MOVIES EXPERIMENT in order to test prediction 7.

Chapter 8 provides a general discussion of the main findings of this dissertation and an overview of the main conclusions.



# CHAPTER 1

## THEORETICAL APPROACHES TO TENSE AND ASPECT

### 1.1. THREE LEVELS OF TEMPORAL SPECIFICATION: PREDICATIONAL ASPECT, GRAMMATICAL ASPECT AND TENSE

Human language, unlike any other animal communication system, has the property of temporal displacement: it enables speakers to refer to remote entities and situations not present at the “here” and “now” of the moment of speaking. By using language, humans can make reference to temporally remote situations in various precise ways and the linguistic categories that make this possible are the categories of Tense and Aspect. There are different levels of information within these categories. First, predicational aspect also named (*Aktionsart, situation types* or *lexical aspect*) (Bybee, 1985)<sup>1</sup> describes how events or situations unfold in time. At this level of aspect, the information is conveyed by the inherent lexical semantic features of the verb, the argument structure of the predicate and some verb particles. Second, grammatical aspect is used to make reference to certain parts of the situations described by predicational aspect and to determine its duration and frequency. This information is manifested by verbal morphology, aspectual particles and different kinds of adverbs or adverbial phrases modifying the sentence. Third, at the level of tense, events and situations are located in time and are temporally related to other events or situations and it is determined how remote that situation is with respect to the present time of speaking or to some other past or future time. This information is expressed by verbal morphology and different kinds of adverbs or adverbial phrases. Additionally, there are principles that rule the logical and coherent

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<sup>1</sup> We take Verkuyl's (2011) terminology because as he points out, predicational aspect does not depend only on lexical meaning of the verb, but on the properties of the whole predicate.

organization of the discourse that also influence the temporal location of events in language<sup>2</sup>.

Temporal information is semantically built up compositionally from these different components. These three levels of temporal information interact in language in a compositional way and are organized hierarchically in the following way:

- (1) [Tense[ grammatical aspect [ predicational aspect]]]

Predicational aspect is determined by the lexical and semantic properties of components of the predicate, the verb and its arguments and, therefore, predicational aspect is more deeply encrusted in the structure. In languages with tense and aspect morphology, the hierarchical structure of the different levels of tense and aspect information is captured by the relative proximity of the different markers to the verb stem: aspect morphology tends to be closer to the verbal stem while tense morphology is external to the verb (2) and in some cases is encoded by an auxiliary (3) (Görksel and Kerslake, 2005, Julien, 2002). This hierarchical configuration holds for tense and aspect inflection across a wide variety of languages:

- (2) genellikle iki saat çalış -ir-di-m  
*usually for two hours work-IPF-PAST-1SG*  
 'I usually work for two hours'

(Turkish: Deo, 2009: 331)

- (3) a. . niśā asoā-mē roṭi ba nā-t-ī hai  
*N<sub>.NOM</sub> kitchen<sub>LOC</sub> bread<sub>.NOM.SG</sub> make-IPF-F.SG PRES-3SG*  
 'Niśā makes bread in the kitchen'

(Hindi: Deo, 2011: 168)

[Examples cited by Deo (2005: 168)]

- b Ana está haciendo pan en la cocina SPANISH  
*Ana be-PRES make-IPF bread in the kitchen*  
 'Ana is making bread in the kitchen'

In languages without verbal morphology, tense and grammatical aspect information is conveyed by the use of adverbials. The relative order of adverbials also reflects the hierarchical structure of the three layers of temporo-aspectual information: aspect adverbials tend to be closer to the verb than temporal adverbs, like in (4):

<sup>2</sup> But such principles are beyond the focus of this dissertation.

- (4) a. Ayer ya lo había hecho  
*Yesterday already PRON<sub>ACC</sub> havePAST done*  
 b. \*Ya ayer lo había hecho  
*Already yesterday PRON<sub>ACC</sub> havePAST done*  
 ‘Yesterday, she had already made it’

Even though tense, grammatical aspect and predicational aspect are distinct and hierarchically organized with respect to each other, these three different levels of temporal information are sometimes difficult to separate because they interact semantically in various ways and in their forms are often intermingled.

First problem when trying to differentiate the three levels of temporal information is determining which level of temporal information a certain form is specifying. For example, Slavic prefixes may be semantically empty effecting only an aspectual shift (5a-b), they may add additional meaning such as incohativity (5c) or even other different and non-aspectual meanings as in (5d)

- (5) a. čitat 'to read' (IPF) pro-čitat 'to read' (PF)  
 b. delat' 'to do' (IPF) s-delat' 'to do' (PF)  
 c. ljubiti 'to love' (IPF) po-ljubiti 'to fall in love' (PF)  
 d. pisati 'to write' (IPF) za-pisati 'to write down' (PF)

For some scholars, such prefixes are telicity markers (Basilisco, 2006, Borik, 2006, Filip, 2000, Piñón, 1994) while for some other scholars analyze them as perfectivity markers (Filip, 2003, Kiparski, 1998, Klein, 1995, Smith, 1991). Same happens with case alternations in Finno-Ugric languages –examples of the phenomena in (54) and (55) – which are alternatively analyzed as grammatical aspect (Borer, 2005) or as predicational aspect (Borer, 2005, Klein, 2009).

Similar debates arise at the level of grammatical aspect and tense. In many languages tense and aspect functions are expressed by the same morpheme. For example, in Spanish Pretérito Indefinido (6a), the suffix *-ó* carries both temporal (PAST) and aspectual (PF) information; similarly, in Spanish Pretérito Imperfecto (6b) the suffix *-ba* carries both temporal (PAST) and aspectual (IPF) information:

- (6) a. Juan jug -ó al tenis Pretérito indefinido  
*Juan play<sub>-PAST,PF</sub> to tennis*  
 ‘Juan played tennis’

b. Juan	jug-a ba	al tenis	Pretérito imperfecto
<i>Juan</i>	<i>play</i> - <small>PAST.IPF</small>	<i>to tennis</i>	
'Juan used to play/was playing tennis'			

Given that both tense and aspect functions are conflated in the same morpheme, in these cases a certain form is contributing to two levels of temporal information at the same time<sup>3</sup>.

Moreover, similar forms may have different functions in other languages. For example, in standard northern Italian and spoken French, the simple past perfective form is not used any more in oral speech and the present perfect is used instead for this past perfective meaning (7a). In contrast to other languages, such as some peninsular dialects of Spanish<sup>4</sup>, where simple past perfective forms are used and the present perfect has a more limited range of use (7b).

(7) a. Hier	Marie	a	réussit	l'examen	French
<i>Yesterday</i>	<i>Marie</i>	<i>have</i> <small>PRES</small>	<i>pass</i> <small>PP</small>	<i>the exam</i>	
'Yesterday Marie passed the exam'					
b. Ayer	María	*ha	aprobado/aprobó	el examen	Spanish
<i>yesterday</i>	<i>Marie</i>	<i>have</i> <small>PRES</small>	<i>pass</i> <small>PP</small> / <i>pass</i> <small>PAST.PF</small>	<i>the exam</i>	
'Yesterday Marie *has passed/passed the exam'					

Thus, similar forms are not directly comparable, as they are subject to the process of language change that may lead to different uses in different languages.

A second problem for disentangling the three levels of temporal information is to distinguish which is the function of tense, grammatical aspect and lexical aspect to locate the event in time. In this sense, there are two different approaches to the function of tense, grammatical aspect and predicational aspect. On the one hand, interval-based approaches (Demirdache & Uribe-Etxebarria, 2000, 2005; Klein, 1994, 1995; Smith, 1991, a.o.) establish a parallelism between tense and grammatical aspect: they are both locate the event in time, ordering the event as previous,

<sup>3</sup> Following Klein (2009: 43), the word “tense” can refer to: (i) the grammatical notion of tense (as in *tense is an inflectional category of the verb*); (ii) a particular form (as in *the English past tense is marked by...*); and (iii) a particular function (as in *this verbal periphrasis expresses future tense*). Crucially, in its second meaning, “tense” is linked to a set of functions that can comprise both tense and aspect distinctions.

<sup>4</sup> This applies for the eastern varieties of Peninsular Spanish. Notice that in some other varieties like in Galicia, Asturias, the Canary Islands and some varieties of South America the opposite is the rule in the case of the recent past.



simultaneous or posterior to some times in the discourse, independently of the kind of predicate they are modifying. On the other hand, event-based approaches (de Swart, 1998, de Swart and Verkuyl, 1999, Kamp and Reyle, 1993, Vendler, 1967, a. o) claim that the temporal location of the event is dependent on the kind of predicate that is being used: states and homogeneous events (activities) typically establish simultaneous relations while telic predicates move the narration forward. The characteristics of the predicate are determined by the basic eventuality established by predicational aspect and by the modifications that aspectual morphology may have introduced to this basic eventuality. Thus, in this case, grammatical aspect yields the same kinds of outputs than predicational aspect: they determine whether predicates are homogeneous, dynamic, etc.

However, two different domains can be distinguished: the level of predicational aspect, which is determined within the VP and the level of grammatical aspect and tense, which is determined by adverbs and functional morphology and is specified outside the VP.

This chapter presents a review of the main approaches to the semantics of predicational aspect, grammatical aspect and tense. It is organized in two big sections, section 1.2 for predicational aspect and section 1.3 for grammatical aspect and tense. Both sections are organized in a similar way: first, the main distinctions within the different levels of aspectual information are presented; second, the main approaches to the behaviour of the different categories are explained and compared; finally, some remarks are made on the pragmatic uses of the different categories. In addition to this, the Spanish tense and aspect inflectional system is described in section 1.3.4. The final section, section 1.4 summarizes the main ideas of the chapter.

## **1.2. PREDICATIONAL ASPECT**

### **1.2.1. Classification of predicates and types of eventualities**

The different behavior of predicates with respect to various linguistic tests has lead researchers to distinguish different aspectual classes depending on several features

such as *stativity/dynamicity*, *telicity/atelicity* and *durativity*. The most commonly accepted classification of aspectual classes is Vendler's (1967) classification of predicational aspect, which distinguishes among four different kinds of predicates: states, activities, accomplishments and achievements. Originally, Vendler's (1991) classification contrasted four classes with respect to two features: durativity and telicity.

	telic	atelic
punctual	achievements	states
durative	accomplishments	activities

Table 1.1: Four-way classification of predicational aspect

A new feature was introduced to the classification: the feature of dynamicity. The introduction of this new feature triggered the distinction of a new aspectual class (Smith, 1991): the aspectual class of semelfactives.

	Stative	Durative	Telic	Examples
States	-	+	-	<i>Know, want, like, have...</i>
Activities	+	+	-	<i>Swim, run, breathe, dance...</i>
Accomplishments	+	+	+	<i>Draw a circle, build a bridge, write a letter, eat an apple</i>
Achievements	+	-	+	<i>Recognize (sth.), find (sth.), arrive, win (a race)...</i>
Semelfactives	-	-	-	<i>Cough, knock, sneeze...</i>

Table 1.2: Five-way classification of predicational aspect types (de Swart, 1998: 20)

TELIC and ATELIC predicates differ on the different kind of entailments that they give rise to when combined with grammatical aspect morphology (Comrie, 1976, Dowty, 1979, Hinrichs, 1986): atelic predicates combined with progressive and imperfective morphology entail the truth of the predicate combined with perfective predicate (8) while telic predicates do not (9).

- (8) ATELIC PREDICATE + IPF → ATELIC PREDICATE + PF
- a. La chica nadaba → La chica nadó  
*The girl swimIPF* → *The girl swimPF*  
 'The girl was swimming' → 'The girl swam'

- |     |  |     |   |
|-----|--|-----|---|
| b   | La chica estaba nadando<br><i>The girl beIPF swimGER</i><br>'The girl was swimming'                        | →   | La chica ha nadado<br><i>The girl havePRES swimPP</i><br>'The girl swam'                                    |
| (9) | TELIC PREDICATE + IPF  | -/→ | TELIC PREDICATE + PF  |
| a.  | El chico dibujaba una flor<br><i>The boy drawIPF a flower</i><br>'The was drawing a flower'                | -/→ | El chico dibujó una flor<br><i>The boy drawPF a flower</i><br>'The bow drew/has drawn a flower'             |
| b.  | La chica estaba dibujando una flor<br><i>The girl beIPF drawGER a flower</i><br>'The was drawing a flower' | -/→ | El chico ha dibujado una flor<br><i>The boy bePRES drawPP a flower</i><br>'The bow drew/has drawn a flower' |

Additionally, telic predicates (10) can be combined with durative adverbials (*in X time/ en X tiempo*) but not with time-frame adverbials (*for X time/ durante X tiempo*); for atelic predicates (11) the opposite holds (Comrie, 1976, Dowty, 1979, Hinrichs, 1986):

- |      |  |  |   |
|------|--|--|---|
| (10) | a. El chico ganó la carrera<br><i>The boy winPF the race</i> | en 10 minutos /<br><i>in 10 minutes/</i>   | ?durante 10 minutos<br><i>?for 10 minutes</i> |
|      | b. The boy won the race                                      | in 10 minutes /                            | ?for 10 minutes.                              |
| (11) | a. La chica nadó<br><i>The girl swimPF</i>                   | ?en 10 minutos /<br><i>?in 10 minutes/</i> | durante 10 minutos<br><i>for 10 minutes</i>   |
|      | b. The girl swam   | ?in 10 minutes /                           | for 10 minutes.                               |

The STATIVE/DYNAMIC DISTINCTION divides eventualities into states and (dynamic) events. The notion of *stativity/dynamicity* has been defined in various ways. Vendler (1967) characterized this notion in relation to whether there is+ a change in time (*dynamic event*) or the situation remains stable (*state*). For example, *know* does not involve any change whilst *swim* does. However, Comrie (1976) pointed out that there are cases that cannot be defined following the requirement of the implication of a change. On the one hand, not all states exclude the possibility of change: “a book can stand on such and such position in a shelf even if its position on a shelf changes (e.g. if I move it every now and again)” (Comrie, 1976: 49). On the other hand, there are dynamic eventualities that do not involve any change like the following: “the oscilloscope is emitting a pure tone at 300 cycles per second” (Comrie, 1976: 49). Therefore, Comrie (1986) redefined the notion of *stativity/dynamicity* in relation to the requirement of an input of energy: effort is required to hold a dynamic event (agentive or non-agentive), while states can be

maintained without any source of energy. In addition to these approaches, Dowty (1993) provided another characterization of dynamicity dependent on the temporal structure of the eventuality: states, unlike activities, accomplishments and achievements, are true at any subinterval of the eventuality. Thus, a state as to know is true of any subinterval of knowing. Contrarily, not any subinterval of cooking qualifies as cooking: cutting vegetables or heating oil on a pan is part of cooking, but not cooking itself. However, cooking a potato for a while is part of cooking a potato. Thus, for activities only a proper subpart of the event qualifies as the event. In contrast, for telic predicates, no subpart of the event qualifies as the event: eating an apple is not true at any subinterval of the event of eating an apple.

The NOTION OF DURATIVITY distinguishes punctual events from events that have duration. This feature is basically proposed to distinguish accomplishments and achievements<sup>5</sup>. But, the linguistic status of such division has been challenged by some observations. On the one hand, Verkuyl (1994) points out that durativity is a property of the world and not a lexical property. For example, *drawing a circle* is a durative accomplishment if the circle is drawn with a pencil or with a chalk on a blackboard; conversely, it can be punctual if it is drawn in the computer by a click of the mouse or by pressing some key of the keyboard. Additionally, as Klein (1994) claims, durativity is highly dependent on the internal argument associated with the predicates and, in most of the cases, world knowledge is responsible of that specification:

- |      |   |              |
|------|---|--------------|
| (12) | a. Guillermo apagó la vela<br><i>Willy blow-outPF the candle</i>            | Punctual     |
|      | a'. Willy blew out the candle   |              |
|      | b. Los bomberos apagaron el fuego<br><i>The firemen blow-outPF the fire</i> | Non-punctual |
|      | b'. The firemen blew out the fire   |              |

Additionally, Klein (1995) claims that time is not discrete but dense. Therefore, no situation can be punctual in the sense of being instantaneous. In fact, all events have duration, even if that duration is extremely short (Piñón, 1997).

<sup>5</sup> Though originally it also distinguished activities from states (Vendler, 1967). See table 1.1

Moreover, traditional tests used to distinguish punctual and durative predicates have been challenged by the evidence. The classical test applied to identify an eventuality as durative or not is the use of the progressive. Normally, states and achievements are odd when combined with the progressive (13) while durative eventualities (14) are not:

- (13) a. ? El niño está encontrando la llave  
*The boy bePRES findGER the key*  
 a'. ?The boy is finding the key
- b. ? Estoy sabiendo la verdad  
*BePRES knowGER the truth*  
 b'. ?I am knowing the truth.
- (14) a. Guille está corriendo  
*Willy bePRES runGER*  
 a'. Willy is running
- b. María está construyendo una torre  
*Mary bePRES buildGERis a tower.*  
 b. Mary is building a tower.

However, there are some states (15) and achievements (16) that can be combined with progressives:

- (15) a. Está siendo idiota  
*BePRES beGER silly.*  
 a'. He is being silly.
- b. Me está gustando esta película.  
*I<sub>ACC</sub> bePRES likeGER this movie<sub>NOM</sub>*  
 b'. I am liking this movie
- (16) a. María está ganando la carrera  
*Mary bePRES winGER the race*  
 a'. Mary is winning the race

Still, it has been claimed that these combinations generate a coercion of the original meaning of the predicate, which has also been taken as evidence that the test actually works. For example, achievements, when combined with progressive (16) generate a preparatory stage meaning, in which only the process leading to completion is asserted. Additionally, stative predicates with progressive morphology have an agentive or volitional meaning (16) that make them similar to activities.



- b. María casi lo reconoció Not ambiguous: no recognition happened.  
*Mary almost be<sub>ACC</sub> recognize<sub>PF</sub>*  
 b'. Mary almost recognized him

However, Salaberry (1998) provides some examples of accomplishments that are ambiguous between negation of the event and the negation of the result (21). Those predicates maintain their ambiguity when translated to Spanish (22).

- (21) a. Mary almost broke the stick Ambiguous  
 b. John almost killed the judge Ambiguous  
 [Salaberry, 1998: 18]

- (22) a. María casi rompió el palo Ambiguous  
*Mary almost break<sub>PF</sub> the stick*  
 b. Juan casi mató al juez Ambiguous  
*John almost kill<sub>PF</sub> the judge*

Salaberry (1998, Verkuyl, 1993) claims that this test is dependent on the volitionality of the external argument: only when the external argument is not volitional the test can be applied to distinguish accomplishments vs. achievements, as in (23).

- (23) a. Casi se muere Not ambiguous  
*Almost se die<sub>PRES</sub>*  
 a'. He almost died  
 b. Casi se rompe el cristal Not ambiguous  
*Almost se break<sub>PRES</sub> the glass*  
 b'. The glass almost broke

As we have seen, there are some controversies on the validity of the notion of *durativity* and on the empirical grounding for the distinction between accomplishments and achievements, namely that such distinctions are claimed to be world knowledge based and not linguistically based (Kamp and Reyle, 1993, Verkuyl, 1993) and that test do not seem to be robust and lacking exceptions. There are still some scholars that defend the distinction between accomplishments and achievements, by defining achievements without recurring to the notion of durativity. Under those approaches, achievements are characterized as pure culminations (Binnick, 1991, Moens and Steedman, 1988, Piñón, 1997) or as the left or right boundaries of eventualities (de Swart, 1998).

However, as the distinction between accomplishment and achievements is controversial, some scholars (Krifka, 1989, Mourelatos, 1981, Parsons, 1990,

Verkuyl, 1993) deny the linguistic status of the durative/punctual distinction and propose a three way classification of predicational classes:

Atelic		Telic
STATE	PROCESS	EVENT
Stative	Dynamic	

Table 1.3: Three way classification of predicational aspect types

Under a three-way characterization of predicational classes, states are distinct from processes and events because they are not dynamic. Dynamic eventualities are further divided into processes or events, depending on telicity.

The features that define these aspectual classes –*stativity/dynamicity*, *telicity/atelicity* (and *durativity*)– are claimed to be predicate/linguistic properties (Comrie, 1976, Filip, 1993/99). The eventualities that occur in the outside world do not have any inherent temporal structure, it is their linguistic description what determines the temporal structure that speakers want to bring out. For example, the description of a situation of the world as a state or as an event does not depend on the situation itself, but on the choice of the speaker. There are situations that can either be described as events (25) or states (24); adjectives are normally used in state descriptions, while verbs offer both states and event descriptions:

- (24) a. Nico está dormido State  
*Nico bePRES slept*  
 b. ‘Nico is asleep’.
- (25) a. Nico está durmiendo Activity  
*Nico bePRES sleepGER*  
 b. ‘Nico is sleeping’

Similarly, “[...] the distinction between telicity and atelicity should not be one in the nature of the object described, but in the description applied to the object” (Krifka, 1998: 207). In fact, the same event can be either described as telic or atelic depending on the speaker's choice:

- (26) a. Pedro corrió durante 20 minutos Atelic  
*Pedro runPF for 20 minutes.*  
 a'. Peter ran for twenty minutes.
- b. Pedro corrió 5km en 20 minutos Telic  
*Pedro runPF 5km in 20 minutes.*  
 a'. Peter ran 5km in twenty minutes.



Therefore it is important to make a distinction between the ontological properties of an event and the linguistic properties of a predicate.

The notion of telicity is fundamental in the present study and has received a lot of attention in the literature. Therefore, it will be further discussed in detail in next section.

### 1.2.2. Two notions and two analyses of telicity

The notion of telicity has been related in the literature to two different properties. Some scholars define telicity in relation to boundedness and the existence of an implicit endpoint (Klein, 1994, Parsons, 1990, Smith, 1991) or a result state (Bennett and Partee, 1972/78, Higginbotham, 2000, Pustejovsky, 1991). The property of having an intrinsic endpoint is what makes telic predicates entail completion (reaching the intrinsic endpoint) when combined with PF:

- (27) a. La chica dibujó una flor → 'The is an existing drawing of a flower  
*The girl drawPF a flower*  
 'The girl drew a flower'
- b. El chico ganó la carrera → 'The race was won by the boy  
*The boy winPF the race*  
 'The boy won the race'

Given that telic predicates have an intrinsic endpoint which is entailed to be reached when combined with PF aspect (27), entailment patterns in (9) are not possible. In contrast, as atelic predicates do not refer to events that have an intrinsic endpoint, entailment patterns in (8) are possible.

Additionally, only a bounded telic predicate can be combined with durative adverbials (10), given that these adverbials measure the time required for the event to reach the endpoint. Additionally, only telic predicates are compatible with verbs like *finish* or *acabar/terminar* in Spanish<sup>6</sup>:

<sup>6</sup> Not all telic predicates can be combined with *finish* or *terminar/acabar*, like in the case of accomplishments:

- (i) a. ?? John finished arriving, finding the key, winning the race.  
 b. ?? Juan terminó/acabó de llegar, encontrar la llave, ganar la carrera.

- (28) a. El chico terminó/acabó de dibujar la flor.  
*The boy endPF/finishPF PREP draw the flower*  
 a'. The boy finished drawing the flower
- b. ?La niña terminó/acabó de nadar  
*The girl endPF/finishPF PREP swim*  
 b'. ?The girl finished swimming

Moreover, only telic predicates can be combined with *take X time, tardar X tiempo* in Spanish, which measure the time until completion is fulfilled:

- (29) a. El niño tardó 10 minutos en dibujar la flor  
*The boy spendPF 10 minutes in drawGER the flower*  
 a'. It took the boy 10 minutes to draw the flower.
- (30) b. ?La niña tardó 10 minutos en nadar  
*The girl spendPF 10 minutes in swimGER*  
 b'. ?It took the girl 10 minutes to swim.

The other approach to the notion of telicity considers the properties of homogeneity and cumulativity (Dowty, 1979, Hinrichs, 1986, Vendler, 1967, Verkuyl, 1972, 1993, a. o.). Atelic predicates are homogeneous because a proper subinterval of the atelic predicate qualifies as an instance of the whole predicate (e.g. a proper subinterval of *swimming* is also *swimming*). On the contrary, telic predicates are not homogeneous (e.g. a subinterval of *drawing a flower* is not *drawing a flower*, but *drawing the petals* or *drawing the stem*). Homogeneity is tested by the raising of the entailments in (31)

- (31) a. La niña nadó de 1 a 3 → La niña nadó de 1 a 2  
*The girl swimPF from 1 to 3* → *The girl swimPF from 1 to 2*  
 a'. The girl swam from 1 to 3 pm → The girl swam from 1 to 2 pm.
- b. El niño dibujó una flor de 1 a 3 -/→ El niño dibujó una flor de 1 a 2  
*The boy drawPF from 1 to 3* -/→ *The boy drawPF from 1 to 2*  
 b'. The boy drew a flower from 1 to 3 pm. -/→ The boy drew a flower from 1 to 2 pm.

Additionally, atelic predicates are cumulative in the sense that any subinterval or set of subintervals of the predicate can be referred by the same predicate (e.g. *swimming a little and immediately swimming a little more* can be taken together as a unique event of *swimming for a while*). Conversely, telic predicates are not cumulative (e.g. *drawing a*

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Thus, the fact that a predicate P can combine with *finish* or equivalent predicates do indicate that a P is telic, but the opposite does not hold: the fact that a predicate P cannot be combined with *finish* or predicates akin does not necessary implicate that P is not telic.

*flower* and *immediately drawing a flower* can only be taken as one event if the denotation of such event is *drawing two flowers*, but not *drawing a flower*). Cumulativity is tested by the entailment in (32), which holds for atelic predicates but not for telic ones:

- (32) a. La niña nadó de 1 a 2 y de 2 a 3 → La niña nadó de 1 a 3  
*The girl swimPF from 1 to 2 and from 2 to 3* → *The girl swimPF from 1 to 3*  
 a'. The girl swam from 1 to 2 and from 2 to 3 → The girl swam from 1 to 3
- b. El niño dibujó una flor de 1 a 2 y de 2 a 3 -/→ El niño dibujó una flor de 1 a 3  
*The boy drawPF a flower from 1 to 2 and from 2 to 3 -/→ The boy drawPF a flower from 1 to 3*  
 b'. The boy drew a flower from 1 to 2 and from 2 to 3 -/→ The boy drew a flower from 1 to 3

Additionally, the notions of durativity and cumulativity are related to the fact that atelic predicates modified by conjoined temporal adjuncts denoting subsequent events are ambiguous between the interpretation that there is only one event or two different events (33). Telic predicates with the same kind of adjuncts can only make reference to two distinct events, as in (34) (Verkuyl, 1993):

- (33) a. La niña durmió el lunes y el martes  
*The girl sleepPF on Monday and Tuesday*  
 b. The girl slept on Monday and on Tuesday (ambiguous: one or two events)
- (34) a. El niño dibujó una flor el lunes y el martes  
*The boy drawPF a flower on Monday and Tuesday*  
 b. The boy drew a flower on Monday and on Tuesday (two events)

The notion of homogeneity can explain the entailment patterns in (8) and (9): as atelic predicates are homogeneous, the internal subevent selected by IPF morphology has the same denotation as the whole event and thus (8) holds; conversely, in the case of telic predicates (9) the homogeneous property does not hold, and therefore the subinterval selected by IPF morphology is not equal to the denotation of the whole event that is selected by PF morphology and there is no entailment.

With respect to the combination with adverbials -examples (10) and (11)- Csirmaz (1993a) claims that durative adverbials and time-frame adverbials are sensitive to the subinterval property, but they are different in their attachment possibilities. While *in-*adverbials have a single attachment site –the level of predicational aspect–, *for-*adverbials have multiple attachment sites and they can appear if the event has the

subinterval property at the predicational or grammatical aspect level. Thus, *in*-adverbials can appear if the event is telic independently of whether aspectual morphology is perfective or progressive (35); in contrast, *for*-adverbials can appear if the subinterval property holds at the predicational aspect level –with atelic predicates – or at the grammatical aspect level –with the progressive– (36):

- |      |   |                    |
|------|---|--------------------|
| (35) | a. Ana escribió un artículo en dos meses                    | TELIC, PF          |
|      | <i>Ana writePF a paper in two months</i>                    |                    |
|      | a'. Fred wrote a paper in two months                        | TELIC, PF          |
|      | b. Ana escribió *en dos meses                               | *ATELIC, PF        |
|      | <i>Ana writePF in two months</i>                            |                    |
|      | b'. Fred wrote *in two months                               | *ATELIC, PF        |
|      | c. Ana escribía/estaba escribiendo un artículo en dos meses | TELIC, IPF         |
|      | <i>Ana writeIPF/beIPF writeGER an article in two months</i> |                    |
|      | c'. Fred was writing a paper in two months                  | TELIC, IPF         |
|      | d. Ana escribía/estaba escribiendo *en dos meses            | *ATELIC, IPF       |
|      | <i>Ana writeIPF/beIPF writeGER in two months</i>            |                    |
|      | d'. Fred was writing *in two months                         | *ATELIC, IPF       |
| (36) | a. Ana escribió un artículo *durante dos meses              | *TELIC             |
|      | <i>Ana writeIPF a paper during two months</i>               |                    |
|      | a'. Fred wrote a paper *for two months                      | *TELIC             |
|      | b. Ana escribió durante dos meses                           | ATELIC             |
|      | <i>Ana writeIPF during two months</i>                       |                    |
|      | b. Fred wrote for two months                                | ATELIC             |
|      | c. Ana estaba escribiendo un artículo durante dos meses     | TELIC, PROGRESSIVE |
|      | <i>Ana beIPF writeGER an article during two months</i>      |                    |
|      | c. Fred was writing a paper for two months                  | TELIC, PROGRESSIVE |

The main goal of linguistic theory and of the theory of predicational classes is to explain these patterns by deriving them in a systematic way from the compositional meaning of the predicate and in interaction with temporal and aspectual morphology, adverbs, temporal modifiers, etc.

There are two main different approaches to the analysis of the compositionality of predicational aspect: the SUB-EVENT BASED APPROACHES or EVENT

DECOMPOSITION ANALYSES <sup>7</sup>, which focus on the different subevents of an eventuality, and *temporally based approaches* or *mereological approaches* to predicational aspect. Under event decomposition analyses, the distinction between telic and atelic predicates is derived by the introduction of some sort of element that denotes an endpoint or a consequent state. In contrast, mereological approaches follow compositionality as strictly as possible, taking into account the contribution of each of the elements that form the predicate to (a)telicity. These two approaches to the compositionality of aspect are associated to the two alternative definitions of telicity existing in the literature: event decomposition analyses define telicity through the notion of *end-point* –having an intrinsic temporal limit or an endpoint– while mereological analyses better fit to a definition of (a)telicity based on the notion *homogeneity* –telic predicates are not homogeneous–.

#### 1.2.2.1. Event decomposition analyses

The definition of telicity based on the notion of a (natural) endpoint is rather vague and intuitive. However, there have been many attempts to determine the notion of the terminal point in a formal way. The most successful one is to define the endpoint as a change of state denoted by the predicate. Following this definition, there have been various proposals of event decomposition that characterize telic predicates as dyadic predicates consisting of a process subevent and a change-of-state subevent, in contrast to atelic predicates, which lack a change-of-state subevent. For example, in Dowty's (1991) *Lexical Decomposition Analysis* aspectual classes were defined by formulas of aspectual calculus in which state predicates were simple elements that served as the basis for creating complex non-state predicates by the application of three main abstract predicates: DO-related to agentivity and distinguishing states from events-, BECOME -related to the entailment of a definite

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<sup>7</sup> There are two different approaches to event decomposition in the literature. On the one hand, the so called *Lexical Conceptual Structures*, *Lexical Relational Structures* (Hale & Keyser 1992, 1993) or *Event Structures* (Levin & Rappaport Hovav 2005), which “are primarily designed to capture those facets of meaning which determine grammatical facets of behaviour, including argument alternations” and the *event decomposition analyses* that are aimed to capture “various entailment relations between sets of sentences containing morphologically related words and the ability to account for interactions between event types and various tense operators and temporal adverbials” (Levin & Rappaport, 2008: 5). This section is focused on the second approach.





level predicates and activities, and 2 *stage predicates*, which have a source state and a target state, and correspond to accomplishments and achievements.

The approach to aspectual composition through the postulation of a ‘change of state’ (Pustejovsky, 1991), a ‘transition’ (Parsons, 1990), a ‘culmination predicate’ (Moens and Steedman, 1988), a ‘culmination point’ and a ‘consequent state’ (Smith, 1991), a ‘resultant state’ (Klein, 1994) or a ‘target state’ (Verkuyl, 2011) treats telicity as an underived notion: telicity only depends on whether the predicate denotes a change of state that is often represented by the division of the telic predicate into two subevents: a process denoting subevent and a target state. However, it has been observed that the quantificational properties of the arguments are crucial for determining the durativity and telicity of the predicates. In (42), the telicity of the predicate depends on whether the internal object is a count noun or a mass noun; in (43) the properties of the external argument determine the durativity and the telicity of the predicate:

- (42) a. *María comió sopa durante horas/\*en una hora*  
*María eatPF soup for hours/ \*in an hour*  
 a'. Mary eat soup for hours/\*in an hour
- b. *María se comió un plato de sopa ?durante horas/en una hora*  
*María eatPF a plate of soup ?for hours/ \*in an hour*  
 b'. Mary eat a bowl of soup ?for hours/ in an hour
- (43) a. *Guille cruzó la calle \*durante dos minutos/en dos minutos*  
*Guille crossPF the street \*for two minutes/ in two minutes*  
 a'. Willy crossed the street \*for two minutes/ in two minutes
- b. *Riadas de gente cruzaron la calle durante varios minutos/ \*en dos minutos*  
*Rivers of people crossPF the street for several minutes/ \*in two minutes*  
 b'. The crowd cross the street for several minutes/\*in two minutes

Additionally, specific properties of PP arguments also define the telicity of some predicates (44):

- (44) a. *Juan corrió a su casa en una hora/\*durante una hora*  
*Juan runPF to his house in an hour/ \*for an hour*  
 a'. John ran to his house /\*for an hour
- b. *Juan corrió alrededor de su casa \*en una hora/durante una hora*  
*Juan runPF around of his house \*in an hour/ for an hour*  
 b'. John ran around his house \*in an hour/for an hour



Theories analyzing telicity in relation to the existence of a change of state in the denotation of the predicate “meet the problem of getting beyond the level of observational adequacy” (Tenny, 1994: 297) because they lose an important generalization: that the properties of predicates are built upon the characteristics of its components and thus they not capture Montague’s idea of semantic compositionality. This is why mereological approaches have been proposed: to analyze telicity in a compositional way.

#### 1.2.2.2. Mereological approach.

The mereological approach to predicational aspect is aimed to describe the contribution of each of the components of the predicate to determine the aspectual properties of the predicate. Under this approach, several dimensions have been identified as contributing to the telicity of the predicate (Borik and Reinhart, 2004, Ramchand, 1997, Rappaport Hovav, 2008, a. o): the volume of an object (45), the length of a path (46) or the scale of a property (47).

- (45) a. Julia ate an apple  
b. Adam made a puzzle
- (46) a. Ana drove from Paris to Madrid  
b. Dani ran from Behobia to San Sebastián
- (47) a. John cleaned the table  
b. The snow melted

There is a systematic relation between the telicity of the predicate and these measuring elements of the predicate and there have been many proposals on how this systematic relation should be defined. The basic idea is that there are mapping relations between parts of eventualities and parts of the volume of an object, the length of a path or the scale of a property and these mapping relations measure incremental changes in these dimensions.

The mereological approach to telicity is linked to the definition of telicity based on the notions of homogeneity and cumulativity: telic predicates are those that are non-homogeneous and non-cumulative. Under these notions it is possible to define telicity in a formal way, by providing a truth-conditional semantic definition of telicity, like the one in Borik and Reinhart (1983: 53):

- (48) a.  $P$  is atelic iff for all intervals  $I$ , such that  $P$  holds at  $I$ , there is an interval  $I'$ , such that  $I'$  is a proper subinterval of  $I$ , and  $P$  holds at  $I'$
- b.  $P$  is telic iff for all intervals  $I$ , such that  $P$  holds at  $I$ , there is no  $I'$ , such that  $I'$  is a proper subinterval of  $I$ , and  $P$  holds at  $I'$

The notions of homogeneity and cumulativity were firstly applied to the distinction between count and mass expressions (Verkuyl, 1972) and later extended to telicity. The mereological approach to telicity claims that the homogeneous/cumulative or non homogeneous/cumulative properties of the elements that form the predicate project and derive the telicity of the predicate.

However, not all arguments or adjuncts delimit the event in the same way. The countable feature of the direct object is a factor for determining the telicity of the predicate only in (49a), but not in (49b):

- |      |                               |              |        |
|------|-------------------------------|--------------|--------|
| (49) | a. Pablo construyó el tambor  | (+COUNTABLE) | Telic  |
|      | <i>Pablo buildPF the drum</i> |              |        |
|      | a'. Paul built the drum       | (+COUNTABLE) | Telic  |
|      | b. Juan tocó el tambor        | (+COUNTABLE) | Atelic |
|      | <i>Pablo playPF the drum</i>  |              |        |
|      | b'. John played the drum      | (+COUNTABLE) | Atelic |

Similarly, not all adjuncts contribute to the telicity of the predicate; in (50) the predicate is telic independently of the occurrence of an adjunct denoting a bounded path:

- |      |   |                  |
|------|---|------------------|
| (50) | a. Dani cogió un avión                              | Telic            |
|      | <i>Dani takePF a plane</i>                          |                  |
|      | a'. Dani took a plane                               | Telic            |
|      | b. Dani cogió un avión de Bilbao a Amsterdam        | (+BOUNDED) Telic |
|      | <i>Dani takePF a plane from Bilbao to Amsterdam</i> |                  |
|      | b'. Dani took a plane from Bilbao to Amsterdam      | (+BOUNDED) Telic |

Some limits to the mapping relations have to be posited to account for the fact that not all arguments and adjuncts contribute to the telicity of the predicate.

In this line, it has been proposed that the verb also carries some kind of specification of whether it selects arguments that contribute to the telicity of the predicate or not. This specification on the meaning of the verb has been formalized in various ways. On the one hand, the verb has been claimed to be lexically specified for object-event mapping relations. For Verkuyl (1989, 1993), the verb carries the

feature [+/-ADD TO] that specifies whether the verb is incremental or not. For incremental verbs with the [+ADD TO] feature the telicity of the predicate is dependent on the quantificational properties of the object, which are specified by the [+/- SQA] feature. The [+/- SQA] determines whether an NP is quantized [+SQA] or cumulative [-SQA]. Quantized objects give rise to telicity while cumulative objects form atelic events. Predicates with a [-ADD TO] feature on the verb are atelic unless they formed by verbs of motion modified by an adjunct denoting direction of motion by a bounded path:

- |      |   |        |
|------|---|--------|
| (51) | a. Jon drank <sub>[+ADD TO]</sub> a beer <sub>[+SQA]</sub>                                | Telic  |
|      | b. Jon drank <sub>[+ADD TO]</sub> water <sub>[-SQA]</sub>                                 | Atelic |
|      | c. Ann pushed <sub>[-ADD TO]</sub> the trolley  | Atelic |
|      | d. Ann pushed the trolley <sub>[-ADD TO]</sub> in the supermarket <sub>[+LOCATION]</sub>  | Atelic |
|      | e. Ann pushed the trolley <sub>[-ADD TO]</sub> to the supermarket <sub>[+DIRECTION]</sub> | Telic  |

Under this approach, incrementality is part of the meaning of the verb and it is not sufficient for telicity, because there are predicates that are incremental and atelic: those whose argument is [-SQA], like *drink water*, *read books*, etc. In fact, incrementality is neither necessary nor sufficient for telicity. It is not necessary for telicity because there are verbs that are not incremental and that are telic, like *hit*, *break* or *kill*.

Additionally, it has been claimed that only a specific thematic relation between the verb and the object satisfies the mapping properties that establish a homomorphic relation between the lattice structure of the object (part-whole structure) and the lattice structure of the event (partially-completely done). This thematic role has been identified with the *Gradual Patient* or *Successive Patient* (Dowty, 1986, Krifka, 1992) or the *Incremental Theme* (Borer, 2005). Under this approach, incrementality is determined indirectly by the meaning of the verb and the assignment of the role of incremental theme to the object.

However, as pointed out by Borer (1998), in certain cases the argument that ‘measures’ out the event is not in a theta-role relationship with the verb, as in the case of resultatives:

- (52) a. We sang the baby asleep  
b. We ran our shoes threadbare

[Examples from Borer (2005: 132)]

Additionally, though originally the proposal was that incrementality is dependent on the establishment of a determined semantic relation of the verb with its measuring argument –the theme role–, in some cases the element that measures out the event does not correspond to the theme, but to the element that occupies the object position. For example, in (53) the two arguments have the same thematic role but the only argument that measures out the event is the one that occupies the object position:

- (53) a. Kim sprayed the paint on the wall. (theme, location)  
 b. Kim sprayed the wall with the paint. (location, theme)

[Examples from Borer (2005: 132)]

This seems to suggest that the relationship between the measuring dimension and the event is in fact more syntactic than semantic.

The syntactic manifestation of telicity in the object is further reinforced by the correlation between accusative/partitive case of the object and telicity in Finnish analyzed by Kiparsky (1998), where the case of the object determines the telicity of the predicate: predicates whose direct object is marked with partitive case are atelic (54) while predicates whose direct object is marked with accusative case are telic (55):

- (54) Ammu –i –n                      karhu –a / kah-ta    karhu –a / karhu-j-a  
*shoot -past -1.sg*                      bear -**part** / two-**part**    bear -**part** / bear-pl-**part**  
 ‘I shot at the (a) bear / at (the) two bears / at (the) bears’

- (55) Ammu –i –n                      karhu –n / kah-si    karhu –a / karhu-t  
*shoot -past -1.sg*                      bear -**acc** / two-**acc**    bear -**part** / bear-pl **acc**  
 ‘I shot the (a) bear / two bears / the bears’

[Examples from Kiparski (2000: 1-2)]

Additionally, there are other elements that contribute to the telicity of the predicate<sup>8</sup>. In some languages, such as Slavic languages, Hindi or Chinese, there are specific prefixes, particles and resultative phrases that mark predicates as telic. However, it

<sup>8</sup> In fact, Krifka (1998) proposes that telicity is determined in two different ways:

- (ii) By the homomorphism between the Incremental Theme lattice structure and the eventuality lattice structure (whose relevant properties depend on the count vs. mass distinction that is determined by the noun and some operators such as quantifiers, measure expressions, case inflection or number morphology...)
- (iii) By verbal predicate operators, such as affixes and particles, whose domain are eventualities (in Slavic Languages, Hindi, Chinese...)

has been observed that the use of such elements is linked to the obligatory presence of the object, as in the following examples from Dutch and Russian:

- (56) a. Judy heeft \*urenlang/in 5 minuten haar kopje koffie **opgedronken**  
*Judy has \*hours-long/in 5 minutes her cup of coffee **up-drunk***  
 'Judy drank her cup of coffee **up** \*for hours/in 5 minutes'
- b. \*Judy heeft **opgedronken**  
 \**Judy has **up-drunk***  
 \*'Judy drunk up'

[Examples from van Hout (2000: 242)]

- (57) a. Vanja **na**-pisal pis'mo  
*Vanja **PFX**-wrote letter*  
 'Vanja wrote down a letter'
- b. \* Vanja **na**-pisal  
 \**Vanja **PFX**-wrote*  
 \*'Vanja wrote down'

[Examples from van Hout (1998: 410)]

The syntactic correlation between object case and telicity motivated the proposal of a syntactic projection for telicity, responsible for the telicity of the predicate and the assignment of case to the object. This projection has received several names, such as AgrO for Van Hout (2005, 2000), [Telic] for Kratzer (2004) and AgrQ for Borer (2004). The telic aspectual projection is claimed to be present only for telic predicates. It is licensed by agreement with the object, which moves to the Spec position and establishes an agreement relation with the head –receiving then case–, or by an appropriate head feature on V that results in the merging of a lexical feature, in line with Kratzer (2005), or a functional morpheme in the head of the aspectual projection, as proposed by Borer (2005).

This is not a problem in a system like Kratzer's (2004), in which verbs can be undelyingly telic or atelic independently of the case and quantization of the object. However, syntactic approaches to telicity such as the one defended by Borer (2008) have to face the empirical problem that there is no simple relationship between the telicity of the predicate and the syntactic object of the predicate: there are telic predicates whose objects are not quantized (58) and atelic predicates whose direct object are quantized (59); additionally, there are telic predicates that do not have an internal argument and there are transitive telic predicates (60):

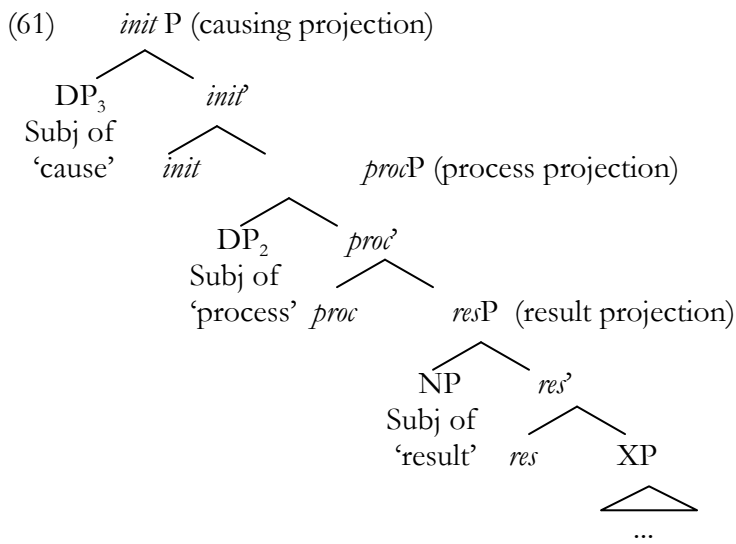
(58) The rainmaker found water using his magic stick in five hours / \*for five hours

(59) a. Jon wore two shirts \*in five hours / for five hours.  
 b. Ane stirred the coffee \*in five minutes/for five minutes

(60) John stood up in a second. (no internal argument)

[Ramchand, (2008: 18-19)]

From a pure constructivist approach, Ramchand (2008) proposes a different kind of analysis to account for the data in (58)-(60). She decomposes the predicate information into a set of distinct categories with specific syntactic and semantic modes of combination. The event structure she proposes contains three subevental components: a causing subevent, a process denoting subevent and a subevent corresponding to the result state. Each of these subevents is represented as its own syntactic projection, ordered in a hierarchical relation, as in (61). The arguments of the predicate are inserted in these categories in the following way: the specifier of the InitP (equivalent to the vP) is the *initiator* and receives the agent role; the specifier of the ProcP (equivalent to the VP) is the *undergoer* and receives the patient role; finally, the specifier of the ResP is the *resultee* and is affected by the change of state denoted by the ResP.



An element can be inserted in two of these positions, being undergoer and resultee at the same time, as in *throw*, being initiator and undergoer simultaneously, as in *enter*, *run* or *dance*, or being undergoer, initiator and resultee at once, as in *arrive*. There are also elements that are inserted as complements of ProcP or ResP; when they are inserted in the ProcP they are called *Paths* and if they denote bounded entities, they

can delimit the event, as in examples (45) and (46). Along these lines, in Ramchand's system, activities correspond to either [init, proc] or [proc] verbs; accomplishments are [init, proc] verbs with a bounded path (an incremental theme) complement; achievements are [init, proc, res], or [proc, res]. "Telicity is no longer a homogenous concept in this system but arises from the interaction of many ingredients: the existence of a Res head gives a final bound for a dynamic event; the existence of a init head gives an initial bound for a dynamic event and both of these are available for anchoring to tense in principle. In addition, in the absence of a res head, a bounded path in the complement position of a process head (whether it be a bounded directional PrepP, or a quantized DP) can also provide a bound to the event that can be located temporally." (Ramchand, 2008: 194). These two ways of deriving telicity correspond to the different semantic approaches to telicity: by the introduction of a change of state or a telos that delimits the event, the ResP, or by the presence of a bounded argument, the bounded path. Thus, the two main semantic approaches to telicity, decomposition analyses and mereological approaches, are reconciled in Ramchand's (2004) work, given that the two approaches are taken as two valid alternatives in deriving telicity.

### 1.2.3. Predicational aspect and pragmatics

The determination of the telicity is based in some cases on assumptions about the events they denote, rather than on the meaning of the verb and the quantificational properties of the object:

- (62) a. Kim pushed the cart/ button/the lever  
b. Kim pulled the rope/the lever.

[Examples from Borer, (2005: 128)]

All the objects above are quantized and delimit the event in the same way. However, the kind of object determines if the predicate that is more susceptible to be interpreted as telic: pushing a cart or pulling a rope are more easily interpreted as atelic while pushing a button or pulling a lever are more easily interpreted as telic.

Furthermore, there is also a large number of transitive predicates whose telic or atelic interpretation is dependent on the context, as for example:

- (63) a. The doctor examined the patient in/for an hour.  
 b. We cooked the egg in/for five minutes.  
 c. We milked the cow in/for ten minutes.  
 d. She cleaned the house in/for two hours.

[Examples from Kratzer (1999)]

Following the examples above, it seems that the determination of telicity depends not only on the syntactic context, the quantificational properties of the object and the semantics of the verb, but also on world knowledge and pragmatic factors.

The role of pragmatics in determining telicity has been reinforced by new analyses of a class of change of state verbs: degree achievement verbs. These verbs can either behave as telic predicates –achievements– if there is a change of state implied or as atelic predicates –process– when they denote a gradual change (64).

- (64) Degree achievement verbs: Widen/shorten, rise/lower, clean, etc

- |                                       |        |
|---------------------------------------|--------|
| a. She cleaned the kitchen in an hour | TELIC  |
| b. She cleaned the kitchen for hours  | ATELIC |

For Hay, Kennedy & Levin (1999) these verbs are taken to denote that their affected argument undergoes a change in some a property, and the difference between telic and atelic senses rests in the degree to which this property changes. When the degree of change can be interpreted as bounded, then the predicate is telic (65a); if the degree of change is considered is unbounded, then the predicate is atelic (65b):

- |   |        |
|---|--------|
| (65) a. The temperature rose 20 degrees | TELIC  |
| b. The temperature rose indefinitely    | ATELIC |

However, the degree of change is not always overtly expressed and, thus, both the telic (66) and the atelic (67) interpretation are possible:

- |   |     |                                |
|---|-----|--------------------------------|
| (66) a. Ann was opening the door        | -/→ | Ann opened the door            |
| b. They were emptying the swimming pool | -/→ | They emptied the swimming pool |
| (67) a. Lucy was shortening the rope    | →   | Lucy shortened the rope        |
| b. The gap is widening                  | →   | The gap widened                |

Most of the degree achievement verbs are derived from adjectives that either denote open or closed scales. The possibility to be modified by ‘half’ and ‘completely’ is the diagnostic of closed-scale adjectives:



- (68) a. completely/ half open/ close/ empty           CLOSED-SCALE ADJ.  
 b. ??completely/ half           long/ wide/ short       OPEN-SCALE ADJ.

When the degree achievement verb is derived from a close-scale adjective, the derived verb is generally interpreted as telic because the scale associated with the adjective has a maximal value that can be identified (66). When the degree achievement verb is derived from an open-scale adjective, the derived verb is generally interpreted as atelic since the scale associated with the adjective lacks a maximal value (67).

The telic interpretation of closed-scale deadjectival degree achievement verbs (66) is generated by the quantity implicature that the reported event was ‘complete’ (Hay et al. 1999). The implicature can be cancelled by modification with a *for adverbial* or by explicit denial with *but not completely*:

- (69) a. Ann opened the door, but not completely.  
 b. They emptied the swimming pool for hours.

This implicature can only be cancelled when no explicit specification of a measure of change is included in the predicate. When the specification of the measure of change is explicit, telicity is not pragmatically implicated, but it is semantically derived from the boundedness of the measure phrase:

- (70) a. The temperature rose 20 degrees, ??but not completely.  
 b. Ane opened the door two inches, ??but not completely.

Thus, in the absence of aspectual modification or an explicit specification of a degree measure of change, telicity of degree achievement verbs is derived through a process of conversational implicature. If the degree achievement verb is derived from a close-scale adjective, the affected argument is assumed to attain the maximal value of the scale denoted by the adjective; if the degree achievement verb is derived from a open-scale adjective, the maximal value of the scale has no particular interpretation and thus the predicate is more likely to be interpreted as atelic. Open-scale deadjectival verbs may also have a telic interpretation in particular contexts. Telicity in those cases is an implicature that can be cancelled (71). The strength of the implicature varies with the ease to identify the final transition to the state in which the theme bears the property to the standard degree.

- (71) a. The tailor was lengthening my pants -/→ The tailor lengthened my pants  
 b. The tailor lengthened my pants, but not completely. [Hay et al. (1999: 138)]

The telos or the denotation of the final bound of the scale is contextually determined, as in (72) where the degree of coolness is different dependent on the context:

- (72) a. The soup cooled in ten minutes so we had to reheat it.  
 b. The soup cooled in ten minutes so we started eating it (before it cooled too much)

The analysis of telicity and degree achievement verbs can be further extended to incremental theme verbs and directed motion verbs: “all three types of telicity can be determined as a function of the boundedness of the difference value defined over a projected scale associated with one of the verb’s arguments, where the nature of the scale depends on the lexical meaning of the verb” (Comrie, 1976: 142). In incremental theme verbs, it is the (un)boundedness of the affected object what determines the telicity of the predicate (73). In motion verbs, the telicity of the predicate depends on the boundedness of the path:

- |      |                              |                                    |
|------|------------------------------|------------------------------------|
| (73) | a. Mary ate soup             | UNBOUNDED OBJECT; ATELIC PREDICATE |
|      | b. Mary ate the soup         | BOUNDED OBJECT; TELIC PREDICATE    |
| (74) | a. Dani run around the house | UNBOUNDED PATH; ATELIC PREDICATE   |
|      | b. Dani run a race           | BOUNDED PATH; TELIC PREDICATE      |

Similarly to close-scale deadjectival degree achievement verbs, telicity with bounded objects (73b) or bounded paths (74b) is generated by a quantity implicature that can be cancelled by modification with a *for adverbial* or by explicit denial with *but not completely*:

- (75) a. Mary ate the soup but not completely.  
 b. Mary ate the soup for hours.
- (76) a. Dani run a race but he didn’t finish it.

Additionally, when a measure phrase is added to the predicate, telicity is not pragmatically implicated, but it is semantically derived from the boundedness of the measure phrase:

- (77) a. Mary ate two spoons of soup ??but not completely  
 b. Dani run twelve meters around the house ??but not completely/?but he did not finish

Therefore, under this analysis of telicity incrementality is separated from telicity but directly related to it. Predicates associated to scales are incremental, but their telicity depends on whether or not the incremental theme is bounded. Under this view of incrementality and telicity, the telos or result state is defined as the attainment of the maximal bound of the scale of change denoted by the adjective in de-adjectival verbs; by the spatial properties of the affected object in incremental theme verbs; or by the path of motion in motion verbs. Thus, by defining a telos or an intrinsic endpoint in relation to incrementality, the two semantic approaches to telicity are unified. Furthermore, this approach highlights the fact that in some cases telicity is a pragmatic implicature indicates that telicity is not fully specified by the syntax or the semantics of the linguistic form<sup>9</sup>.

### 1.3. GRAMMATICAL ASPECT AND TENSE

#### 1.3.1. Tense and Aspect distinctions

This section is an introduction to the main distinctions conveyed at the level of grammatical aspect –(im)perfectivity, the perfect, neutral aspect – and tense –past, present, future, null tense– and the morphological manifestation of these distinctions.

##### 1.3.1.1. Grammatical aspect distinctions

Grammatical aspect is a semantic notion with morphological manifestation that expresses ‘different ways of viewing the internal temporal constituency of a situation’ (Isančenko, 1968: 3).

Two main macro-categories have been distinguished at the level of grammatical aspect: *perfective aspect* (PF) and *imperfective aspect* (IPF)<sup>10</sup>. The role of these two categories has often been described by using metaphors. Isančenko (1991) uses the

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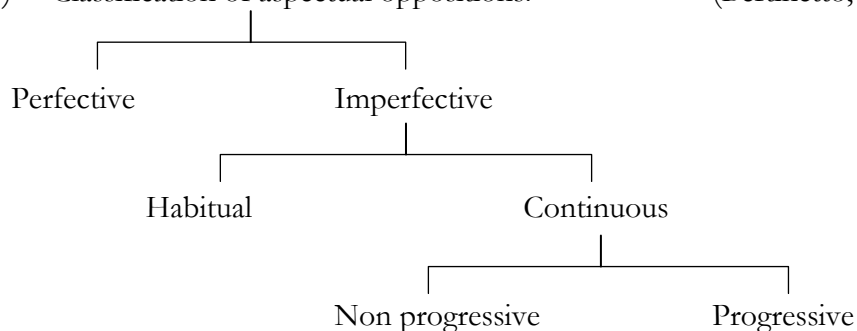
<sup>9</sup> Ramchand (2006), following Hay et al. (1999) also defends that with bounded Paths or bounded scales of change, telicity can be pragmatically implied.

<sup>10</sup> In addition to the different aspectual categories discussed in this section, some other aspectual distinctions have been related to grammatical aspect, such as iterative (the action is repeated), inceptive (beginning of the situation) or inchoative (initiation of a state), etc. These distinctions, however, are beyond the focus of this dissertation.

parade metaphor: establishing a parallelism between a parade and an event, PF aspect would be like viewing the parade from a balcony, where both the beginning and ending are visible, while IPF aspect would be like viewing the parade from inside, where the end cannot be seen. The lens metaphor (Smith, 1991) states that ‘aspectual viewpoints function like the lens of a camera, making objects visible to the receiver [...] and just as the camera lens is necessary to make the object available for a picture, so viewpoints are necessary to make visible the situation talked about in a sentence’ (Comrie, 1976: 61) PF aspect would be like a wide angle lens which frames the whole event, while IPF aspect would be like a zoom lens that focuses on a detail, on a part of the event. Thus, sentences with PF present a situation as a whole, including the initial and the final endpoints of the situation. Conversely, IPF does not provide information about the endpoint of a situation, but it makes explicit reference to the internal constituency of the situation.

The internal constituency of situations is varied: a certain situation can be presented in different ways by focalizing different features of its internal constituency, such as its frequency, its progression, etc. Similarly, IPF involves different aspectual meanings: habitual, continuous and progressive.

(78) Classification of aspectual oppositions: (Bertinetto, 1986: 25)



Progressive meaning focalizes a certain moment in which the event is in progress (79); continuous meaning, on the other side, focalizes a period of time during which the event holds (80); habitual meaning refers to situations whose repetition is taken as a characterizing property of the subject (81) (Comrie, 1976: 171).

- (79) a. *María leía un libro, cuando entró Juan.*  
*Mary readPAST.IPF a book when John entered*  
 ‘María was reading a book when John entered’

- b. María      estaba      leye-ndo    un libro,      cuando entró Juan  
*Mary      bePAST.IPF read-ing    a book      when John entered*  
 ‘María was reading a book when John entered’
- (80) a. María      leía              un libro      ese verano  
*Mary      readPAST.IPF a book      that summer*  
 ‘María was reading a book that summer’
- b. María      andaba      leyendo      un libro      ese verano  
*Mary      walkPAST.IPF reading    a book      that summer*  
 ‘María was reading a book that summer’
- (81) a. María      leía              un libro      todos los días de camino al trabajo  
*Mary      readPAST.IPF a book e      very day in her way to work*  
 ‘Mary used to read every day in her way to work’
- b. María      solía              leer    un libro    todos los días de camino al trabajo  
*Mary      used toPAST.IPF read a book    every day in her way to work*  
 ‘Mary used to read every day in her way to work’

Languages differ in the way they grammaticalize meanings into certain specific morphemes. While there are languages that only have one IPF marking that covers habitual, continuous and progressive meanings, other languages have specific morphemes or specific constructions to convey each of these meanings. For example, in English the *use to V* construction grammaticalizes the habitual meaning; Chinese does not have a specific form for that meaning, so in this language the habitual meaning is conveyed by frequency adverbs. Similarly, in Spanish and English there is a special construction to convey the progressive meaning: *be + -ing*; *estar + -ndo*. However, in Spanish the simple IPF does not exclude the progressive meaning (80), while in English the progressive meaning can only be expressed by the progressive periphrasis (Dowty, 1979: 25).

PF and IPF morphology<sup>11</sup> license different logical entailments when they are combined with telic predicates (Dowty, 1979):

- (82) a. The clown built a bridge       $\longrightarrow$     The bridge is built  
 b. The clown was building a bridge     $\text{—/—}$   $\rightarrow$     The bridge is built

<sup>11</sup> This happens with IPF morphology with the progressive and the continuous reading. With the habitual reading completion is entailed:

- (iv) Amaia      iba      a Vitoria      dos veces a la semana  
*Amaia      goIPF    to Vitoria      twice a week*  
 ‘Amaia used to go to Vitoria twice a week’

Telic predicates combined with PF aspect entail the completion of the predicate: they refer only to complete events (82a). Completion in this case is an entailment because it is not cancellable without contradiction:

- (83) ?The clown built a bridge but the bridge is not done.

Conversely, telic predicates, when combined with IPF, do not entail completion (82b). IPF with progressive meaning 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 related to complete and incomplete events, and thus the assertion or the negation of the result does not give rise to contradiction or redundancy:

- (84) a. The clown was building a bridge but the bridge is not done  
b. The clown was building a bridge and now the bridge is done.

The cancellation of the completion entailments of telic predicates with IPF morphology has been known in the literature as the *Imperfective Paradox* (Ducrot, 1979, Kenny, 1963, a. o)

The other main difference between PF and IPF aspect is related to the different temporal ordering relations of events that PF and IPF aspect impose with relation to other situations or events active in the previous discourse or in the linguistic context: PF typically establishes a sequence of events (85) while IPF establishes simultaneity of events (86).

- (85) a. When she came, he made the dinner.  
b. Cuando ella llegó, él hizo la cena.  
*When she came*<sub>PF</sub>, *he make*<sub>PAST.PF</sub> *the dinner*
- (86) a. When she came, he was making the dinner.  
b. Cuando ella llegó, él hacía/estaba haciendo la cena.  
*When she came*<sub>PF</sub>, *he made*<sub>PAST.IPF</sub> / *be*<sub>PAST.IPF</sub> *the dinner*

As a consequence, IPF is claimed to be referentially dependent: it establishes a simultaneity relation with some other time in the discourse, which can be implicit or can be explicitly determined by a previous sentence or a temporal adjunct. Isolated sentences with IPF, which are rare, are not felicitous when there is not access to the reference interval or when this reference interval cannot be reconstructed by the context or world knowledge (87). However, if the context provides sufficient contextual information to retrieve the reference interval, IPF can be uttered out of

the blue. For example, if one returns home from the street totally wet, sentence (88) is completely felicitous.

(87) a. Francia se llamaba la Galia (Leonetti, 2004)  
       ‘France was called la Galia’

(88) a. Llovía a cántaros (Comrie, 1976)  
       ‘It was raining cats and dogs’

Thus, IPF aspect forms have referential properties: they have to be linked to some antecedent through the linguistic context or by means of some world knowledge linked to the situation described.

In narratives, the PF is used to foreground information and contributes to the progress of a narrative while the IPF is used for providing the background information of a situation.

In addition to PF and IPF aspect, another kind of aspect has been described: the so-called Perfect (PERF) aspect. PERF “indicates the continuing present relevance of a past situation” (Comrie 1976: 52), it “expresses a relation between two time-points, on the one hand the time of the state resulting from a prior situation, and on the other the time of that prior situation (Comrie, 1976: 33). Crosslinguistically, perfects often come in analytic constructions composed by an auxiliary *have* that is inflected for tense and a past participle:

(89) a. He /había /habré com-ido un bocadillo  
       *Have*PRES/*PAST*.IPF/*FUT* *eat*P.P *a sandwich*  
       b. I have/had/will have eaten a sandwich

Present perfects can have different meanings (Ritz, 2012). The universal or persistent perfect denotes a state that holds throughout an interval (90a). The existential or experiential perfect states that the event occurred at least once before the present (90b). The perfect of result or the stative perfect expresses that the result of a past situation holds at the moment of speech (90c). The perfect of ‘hot news’ or recent past states that an event has recently occurred (90d).

(90) a. Matilda has lived in Sydney for two years.  
       b. Dean has been to Adelaide  
       c. Dean has arrived (he is here)  
       d. The Reserve Bank has just announced an increase in interest rates

[Examples from Ritz (1991: 883)]

What is common to all perfect meanings is the notion of “present or current relevance”<sup>12</sup>. It is this current relevance what distinguishes PERF from PF: PERF is infelicitous when referring to non-current relevant situations (Klein, 1992):

- (91) a. # Einstein has visited Princeton.  
b. Einstein visited Princeton.

Additionally, PF forms can be combined freely with any past time denoting modifier, while the present PF is incompatible with temporal modifiers denoting a specific past time, as in example (92).

- (92) a. El payaso dibujó una flor ayer/hace tres horas.  
‘The clown drew-*preterit* the flower yesterday/three hours ago’  
  
b. El payaso ha dibujado una flor\*ayer/hace tres horas.  
‘The clown has-drawn-*present perfect* the flower \*yesterday/three hours ago’

However, this last property is not shared by perfects crosslinguistically (Musan, 2001: The present perfect puzzle):

- (93) a. \* John has left at 10. (ENGLISH)  
  
b. Hans ist gestern um zehn weggegangen.  
*Hans is yesterday at 10 left*  
‘Hans has left yesterday at 10.’ (GERMAN: Giorgi & Pianesi, 1997)  
  
c. Gianni è partito alle quattro.  
*Gianni is left at 4*  
‘Gianni has left at 4.’ (ITALIAN: Iatridou et al., 2001)

In addition to PF, IPF and PERF, some scholars (Smith, 1991) propose the existence of a neutral aspect that “includes the initial point and at least one stage of a situation” (Smith, 1991: 62). Initially, this kind of grammatical aspect distinction was proposed to explain the semantic behavior of non-overt morphology in languages like French, Chinese or Navajo (Iatridou et al., 2001), but it was latter extended to other languages like Bulgarian (Laca, 2008) and to some forms with overt morphology such as simple tenses and past perfect in German or French (Laca, 2010, Schaden, 2007, Smith, 1991). These forms, similar to IPF and in contrast to PF, do not assert completion when combined with telic verbs.

<sup>12</sup> Binnick (1991) classifies the different approaches to PERF in the following types: the ‘indefinite past’, the ‘extended now’, the ‘embedded past’ and the ‘current relevance’ theories. These different approaches differ in which particular feature of the PERF they focus and on how they account for it: semantically, syntactically or pragmatically. See Binnick 1991 for more information.



Additionally, they generate both sequential readings –like PF– and simultaneous readings –like IPF–:

- (94) Zhangsan      dao    jia      de shihou,      Mali    xie      gongzuo baogao.  
*Zhangsan      arrive home de-time,      Mali    write work report*  
 (i) ‘When Zhangsan arrived at home, Mali wrote the work report.’  
 (ii) ‘When Zhangsan arrived at home, Mali was writing the work report.’  
 [from Smith (2007:121)]
- (95) a. Wenn der Hans    ankommt,      singt      die Maria      (German)  
*When the Hans    comePRES,      sing PRES      the Maria*  
 b. Quand Jean      arriva,      Marie    chanta      (French)  
*when Jean      arrivePAST,      Marie    singPAST*  
 (i) ‘When Jean arrives, Marie sings (starts to sing).’  
 (ii) ‘When Jean arrives, Marie is singing.’
- (96) a. Als der Hans      ankam,      sang      die Maria      (German)  
*When the Hans      arrivePAST,      singPAST      the Maria*  
 b. Quand Jean      arrive,      Marie    chante      (French)  
*When Jean      arrivePAST,      Marie    singPAST*  
 (i) ‘When Hans arrived, Maria sang (started to sing).’  
 (ii) ‘When Hans arrived, Maria was singing.’
- (97) Quand Jean      arrivera,      Marie    chantera      (French)  
*When Jean      arriveFUT,      Marie    singFUT*  
 (i) ‘When Hans will arrive, Maria will sang (start to sing).’  
 (ii) ‘When Hans will arrive, Maria will be singing.’
- (98) Als der Hans    angekommen ist, hat      die Maria gesungen. (German)  
*When the Hans    arrivedPP    isPRES, hasPRES      the Maria    singPP*  
 (i) ‘When Hans arrived, Maria sang (started to sing).’  
 (ii) ‘When Hans arrived, Maria was singing.’  
 [From Schaden, (2004)]

However, some scholars claim that there is no need to postulate the existence of such neutral aspect. On the one hand, Crsimaz (2003) derives so-called neutral aspect forms in Bulgarian (Comrie, 1985), from the interaction of lexical and grammatical aspect. On the other hand, Schaden (2007, 2008) claims that the null-aspect in languages that lack overt aspect specification and the forms in (95) to (98) can be analyzed as underspecified forms.

### 1.3.1.2. Tense distinctions

Tense is a grammatical category that is used to locate events in time. The function of tenses is to determine the linguistic time by establishing a deictic location relation between the time of the event and some other relevant time in the discourse, which

is normally the moment of speech though it can be some salient moment the discourse.

Following Comrie (1998), there are three major parameters for defining tense categories: (I) the deictic centre, which can be the moment of speech –for absolute tenses– or some other moment in the discourse –for relative tenses–; (II) the relation of the time of the event with respect to the deictic center, which can be prior –past tense–, subsequent –future– or simultaneous –present– to the deictic centre; (III) the distance at which the event is located.

The different temporal relations, PAST, PRES and FUT locate the time of the situation prior, simultaneous or posterior to some deictic time. Such deictic time can be the time of speech for absolute tenses and for absolute adverbs such as the ones in (99), or some other relevant time in the discourse for relative tenses and for relative adverbs such as the ones in (100):

- (99) a. Today/Hoy = the day including the moment of speech.  
b. Yesterday/Ayer = the day before the day including the moment of speech  
c. Tomorrow/Mañana= the day after the day including the moment of speech
- (100) a. On the same day /El mismo día  
b. The day before / El día anterior  
c. The following day / El siguiente día

The best example of a relative tense is the pluscuamperfect, which means that there is a reference point in the past and the event or situation denoted by the predicate is located prior to that reference time:

- (101) a. Dani ya había llegado cuando empezó a llover  
b. Dani had already arrived when it started to rain

There are tenses which have absolute uses in main clauses, but show a relative use within the scope of another tense. In such contexts there are restrictions on the occurrence of tenses and on the temporal interpretation of such tenses: the only possible interpretation of (102a) is a back-shift reading of the embedded perfect, that is prior to the ‘saying’ event; in (102b), Mary’s pregnancy can be prior or simultaneous to the ‘saying’ event.

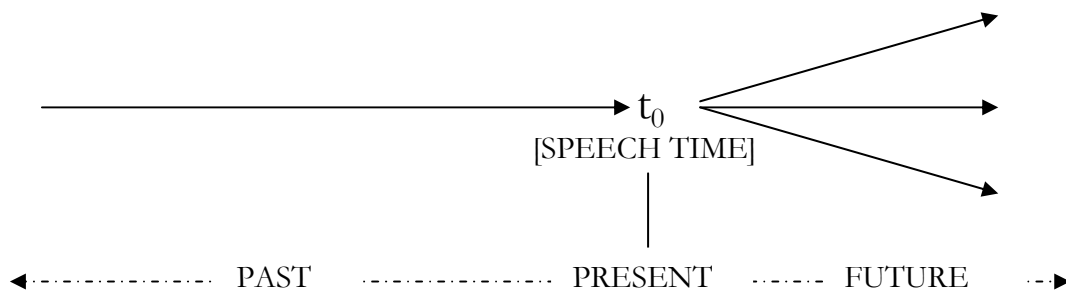
- (102) a. Mary said that John had left.  
b. John said that Mary was pregnant.

Some theories hold that tenses have basic meanings that can be shifted or transformed under embedding to other tenses. Some other theories (Comrie, 1985) claim that some morphological tenses in embedded contexts are zero tenses: they are semantically vacuous and underspecified for tense features; they bear the same morphological features of the nearest c-commanding tense and they bear the same features of the nearest c-commanding tenses.

For both relative and absolute tenses, three different temporal relations can be defined: past (PAST), which locates the time of the situation prior to the deictic centre –the time of speech or some other relevant time–; present (PRES), which means coincidence of the deictic centre and the time of the situation; and future (FUT), which locates the event after the deictic centre. These three distinctions are attested in absolute tenses in many languages; however, there are some languages that have a basic two-way split, with either an opposition between future and non-future –realis vs. irrealis–, like Dyirbal, or Hua; or with an opposition between past and non-past, like German or Finnish, where the so-called present tense is often used for future reference and the future tense has modal uses that don't have future reference (Comrie, 1985:49).

In fact, the future has a special status. Although it is often treated as mirror image to the past (Hornstein, 1990, Kamp, 1979, Reichenbach, 1947, a. o), it refers to a time that has not been effected yet. While past and present are settled, future is open. In this sense, the future specifies the set of possible worlds and it is taken to be inherently modal from a semantic perspective.

(103) Diagram of past, present and future:



The diagram is related to world-time model. The basic idea is that possible worlds of past and present are constrained by the notion of *historical necessity* (Dahl, 1985, Thomason, 1984): they are true regardless of what the future is like. In contrast, the future has a possible world structure that branches forward, giving rise to a structure of multiple copies of possible worlds for the future that have an identical past. Under this modal analysis of the future, the fact that the future is expressed through a modal verb in some languages, like in English, may not be analyzed as accidental, but related to the special semantic status of the future tense.

In addition to the location of the event as prior, simultaneous or subsequent to the time of utterance or to some other relevant time in the discourse, there are languages (Bybee, 1985), that make more refined temporal distinctions, differentiating levels of remoteness and immediacy in past and future, such as ‘long before’ or ‘shortly after’, or ‘before but not in the same day’. Of course all languages can make this refinement by the use of temporal expressions like *x minutes ago* or *in x days*, and the grammaticalization of these remoteness distinctions in the verbal morphology is not present in all languages.

#### 1.3.1.3. Tense and aspect morphology

The expression of linguistic time varies crosslinguistically. There are languages, like Chinese, in which there are no tense morphemes or particles conveying tense meaning. In such languages, the temporal location of the event is determined by the context, by lexical elements such as adverbs and by lexical and grammatical aspect. Some languages, like Slavic languages, have specific morphemes for tense that are distinct and separated from aspect morphemes: aspect is expressed by prefixes and infixes while tense is always expressed in the suffix (104). In some other languages, like Basque, tense morphology normally appears in the auxiliary while aspect is encoded in the main verb (105). In addition, there are some other languages, like Spanish, that have forms in which tense information is expressed by an affix that also carries aspect and mood information.

	<u>PAST</u>	<u>PRESENT</u>	
(104)	a. <i>čitál</i> Read <sub>-PAST</sub> 'I read'	<i>pro-čitá-ju</i> Read <sub>-PRES</sub> 'I am reading'	POLISH
	b. <i>pro-čitá-l</i> <i>PERF-read-PAST</i> 'I read'	<i>pro-čitá-ju</i> <i>PERF-read-PRES</i> 'I shall read'	
(105)	a. <i>ekartzen zuen</i> <i>bring<sub>GER</sub>be<sub>PAST</sub></i> 'he brought, he used to bring'	<i>ekartzen du</i> <i>bring<sub>GER</sub>be<sub>PRES</sub></i> 'he is bringing'	BASQUE
	b. <i>ekartzen zuen</i> <i>bring<sub>PP</sub>be<sub>PAST</sub></i> 'he had brought'	<i>ekarri du</i> <i>bring<sub>PP</sub>be<sub>PRES</sub></i> 'he has brought'	
(106)	a. <i>cant-Ø -ó-Ø</i> <i>sing-Ø-PAST.PF-1SG</i> 'He sang'		SPANISH
	b. <i>cant-aba-Ø</i> <i>sing-Ø-PAST.PF-1SG</i> 'He was singing/used to sing'		

Some languages, like Spanish, have an array of different possible form configurations of tense and aspect, showing for some meanings periphrastic morphology and for some other meanings synthetic morphology.

In fact, there are certain meanings that are usually expressed by periphrastic morphology and some that are usually conveyed by synthetic morphology. These different configurations are not casual: there is a correlation between the meanings of the tense and aspect categories and their formal expression –bound, periphrastic or unmarked– (Bybee et al., 1994, Dahl, 1985, Dahl, 2000).

(107) Linguistic expression of the major semantic categories in Dahl (1989b)

<u>Periphrastic</u>		<u>Bound</u>	
perfect(16/18)	88%	past (33/45)	73%
		perfective (17/20)	85%
progressive (18/19)	95%	imperfective (7/7)	100%
future (27/50)	54%	future (23/50)	46%

[Bybee & Dahl, (2011: 51); taken from Deo (2011: 171)]

The correlation in (107) is linked to a diachronic process of grammaticalization by which, crosslinguistically, certain forms tend to evolve to express some other meanings:

- (108) Unidirectional diachronic trajectories: [From Deo (1985a: 171)]
- a. PROGRESSIVE >> IMPERFECTIVE  
Languages: Yoruba, Scots Gaelic, Turkish, Maa, Margi, Kui (Bybee et al., 1994, Comrie, 1976)
  - b. RESULTATIVE >> PERFECT >> PERFECTIVE/ PAST  
Languages: Kru, Ewe, French, Italian, German (Dahl, 1985, Dahl, 2000, Dowty, 1980)

These grammaticalization paths are connected to the morphosyntactic expression of the different semantic categories in (107): since progressive and resultative/perfect are relatively recent formations in languages, they also tend to be periphrastic, given an independent historical tendency of phonological reduction of syntactic material which establishes a word>clitic>affix trajectory in the morphosyntactic evolution of a form.

But grammaticalization paths are constrained by the other forms that are there in a language. In the path of meaning change, two forms can become suitable to be used in a certain context. In that context, the two overlapping forms do not alternate freely, they compete with each other in various ways. First, considerations of specificity/generalizability determine the relative distribution of the forms: a formal marker generally fails to appear in certain semantic contexts that its meaning is compatible with because its use is blocked by the presence of a more specific formal marker (see Dahl's (2000) "Doughnut Gram" or Dowty's (2009) "Gricean Blocking"). This is what happens, for example, with English simple present: since the language realizes the imperfective and the progressive, the simple past marker is not used to express progressive meaning:

- (109) a. John ?runs / is running right now

This blocking of the PROG and the IPF also occurs in Hindi with simple past (Marchese, 1986), but it does not occur in French or Italian with the simple imperfective past forms of *Imparfait* and *Imperfetto* (Koontz-Garboden, 2004: 108), nor it occurs with Spanish *Imperfecto*. This fact has led researchers to propose some

other constraints of the grammaticalization process. Koontz-Gaborden (2005) –for Spanish- and Kiparski (1967) –on Vedic Saanskrit- have explained these different patterns as an optimizing competition of two opposite constraints: SEMANTIC EXPRESSIVENESS, which prefers forms with specific meanings over forms with general meanings, and STRUCTURAL ECONOMY that ranks synthetic expressions over periphrastic ones. Under these analyses, Hindi ranks expressiveness over economy while in Spanish, French and Italian the constraints are not ranked:

- (110) Hindi: Expressiveness >> economy  
 Italian, Spanish, French: Expressiveness, economy

Therefore, variation in the array of tenses that a language has may lead to different grammaticalization paths and thus, similar forms in related languages may not have the same meaning. For example, in French the simple perfective past *passé simple* is not longer used in oral language. This has led to a spread of the meaning of the present perfect form of the *passé composé*, which can now be used to express past perfective meaning instead of a perfect meaning. In contrast, in Spanish the form of the simple perfective past *pretérito indefinido* is still used in oral speech and thus the present perfect cannot be used as a past form. These different processes of grammaticalization of similar forms make crosslinguistic comparison difficult. Additionally, the determination of the exact meaning of the different forms within a language is complicated by the fact that a form may be in the process of grammaticalization and/or it can be dispreferred but not excluded for certain meanings because there is a more specific form for that meaning.

### 1.3.2. Theoretical approaches to grammatical aspect and tense

#### 1.3.2.1. Logic and in semantics: tense as a operator or tense as a referential expression

Semantic theory of language is aimed to develop a logic representation of the forms in language. In the case of tense and aspect, the question is how to develop a logic structure that captures the meaning and function of tense and aspect morphemes and other temporal expressions such as adverbs and adverbial phrases. There are various possibilities of representing tense in the logical structure. On the one hand,





However, there are limits on the iteration and nesting of tenses in natural language (de Swart and Verkuyl, 1999, Kamp and Reyle, 1993, a. o). A structure such as (114) is perfectly well formed by the logic of tense operator but it does not exist in any natural language.

(114) PAST [PAST [FUT [ PAST [P(x)]]]]

Even the complex tenses such as the pluscuamperfect (113b) and prospective past perfects (113c) are paraphrased for tense logical formulas with two or three layers of tense operators at most (de Swart and Verkuyl, 1999: 59).

In addition to this, the logical representation of tenses as sentential operators has to face empirical problems related to scope interaction between adverbs and tenses yesterday (Enç, 1987), as in example (115):

(115) John arrived yesterday  
 a. Yesterday [P[John arrive]]  
 b. P [yesterday [John arrive]]

The two configurations in (115a) and (115b) fail to represent the meaning of the sentence in (115). (115a) claims that John's arrival is past of yesterday, so John might have arrived two days ago, a week ago or a month ago. Alternatively, (115b) is redundant: it claims that it is true in the past that John's arrival was yesterday.

Additionally, the interaction of tense operators and quantified expressions also fail to produce the proper scope relations (Enç, 1989). For the sentence in (116) two different scope relations between the quantifier and the tense operator can be proposed: (116b) and (116c). (116b) states that all present rich men were obnoxious children in the past, while (116c) states that all past rich men were obnoxious children in the past. Both scope relations fail to capture the true meaning of the sentence, which is (116a).

(116) All rich men were obnoxious children  
 a. All rich men (past and present ones) were at a previous time obnoxious children  
 b.  $\forall x$  (rich-man ( $x$ )  $\rightarrow$  P (obnoxious-child ( $x$ )))  
 c. P ( $\forall x$  (rich-man ( $x$ )  $\rightarrow$  obnoxious-child ( $x$ )))

[Example by Enç (1986)]

Although the analysis of tenses as operators is still popular among logicians, it is no longer used in semantic theory. In fact, there are various insights that have become standard for the semantic representation of tense and aspect in linguistic theory.

First, Partee (1973) suggested that tenses in natural languages are not operators but referential expressions, by pointing out certain analogies between pronouns and tenses. Tenses, like pronouns, can have deictic, anaphoric and bound variable uses (119). A sentence such as (117) when uttered, for instance, halfway down the highway it does not mean that there is no time in the past at which I did not turn off the stove or that there I not time in the past at which I turn off the stove, but it refers to a particular time whose identity is clear from the linguistic context. In this case, tense is deictic.

(117) I didn't turn off the stove.

Anaphoric uses of tenses are exemplified by sentences such as (118) where the temporal clause provides descriptive specifications of the time of the main clause.

(118) a. Sheila had a party last Friday and Sam got drunk.  
b. When Susan walked in, Peter left.

Tenses can be used as bound variables. (119a) can be paraphrased by (119b), where the tense is serving as the variable quantified over by the adverb 'never'.

(119) a. John never talks when he is eating  
b. There is no time  $t$  such that John talks at  $t$  and John is eating at  $t$

Given these analogies between pronouns and tenses, tenses are commonly regarded as relational expressions that encode temporal relation between temporal entities. The analogies of pronouns and tenses has lead to some scholars (de Swart, 1998, de Swart and Verkuyl, 1999, Heim, 1982, Kamp and Rohrer, 1983, 1993, Smith, 1991) to analyze tense and grammatical aspect within the frame of Discourse Representation Theory (DRT) (Giorgi and Pianesi, 1997) and claim that tense markers introduce time variables in the discourse whose value is determined by the context.

For adopting a referential approach to tenses, one has to define the nature of such temporal entities. Temporal logic created a model of tense as operators that affect temporal points. The definition of temporal variables as time points generates the

following problem: for (120) to be true at utterance time  $u$ , there must be a time point  $t$  anterior to  $u$  at which  $run(John)$  is true; ‘under what conditions  $run(John)$  is true at time  $t$ ? Is John moving his left leg, his right leg, or both? What if at  $t$  John is pausing between two successive steps?’ (Bennett and Partee, 1972/78:23)

- (120) a. John ran  
b.  $\exists t (\text{run}(\text{John})) \wedge t < u$

This problem can be solved by taking into account intervals instead of time points, an approach that has been proposed by Bennet & Partee (1979); Dowty (1981); Bach (2006); Borik (1967), among others.

Another alternative is to defend the existence of ontological entities such as events and states. Following Davidson (2006), simple sentences involve an existential quantification over individual events that are represented by an event variable  $e$  introduced by *in* proposition in the similar way objects are introduced by the predicates:

- (121) John ran  
 $\exists e (\text{run}(\text{John}, e))$

Adopting intervals or the ontological entities of events and states have led to two different approaches to grammatical aspect and tense that will be presented in the following section.

### 1.3.2.2. Two different approaches to grammatical aspect and tense

There are two main approaches to describe the semantic function of tense and aspect morphemes in language: INTERVAL-BASED THEORIES or relational theories or EVENT-BASED THEORIES OF ASPECT (in Verkuyl’s, 2011, terminology<sup>13</sup>). The

<sup>13</sup> Binnick (2006) also distinguishes between three different theories of grammatical aspect:

- Boundedness theories, which take aspectual operators to make reference to temporal boundaries or edges of eventualities (Smith, 1991)
- Phasic theories: aspectual operators are taken as predicate modifiers that map eventuality predicates of a given aspectual type to their phases of sub-eventualities, which may be of a different aspectual class, directly manipulating the telicity of predicates in their scope (Mourelatos, 1978; Vlach, 1981; Kamp & Rohrer, 1983; Moens & Steedman, 1988; De Swart, 1998)
- Relational aspect theories: aspectual categories are said to express relations between a salient reference time and the time of the eventuality (Reichenbach, 1947; Klein, 1994)

Relational aspect theories correspond to Verkuyl’s (2011) interval-based theories while event-based

main difference between the two is that INTERVAL-BASED APPROACHES establish a parallelism between tense and grammatical aspect marking: establishing the ordering of the different time intervals relevant for the temporal location of events –the Event Time– with respect to the deictic centre –Speech Time– and to some other relevant time in the discourse –the Reference Time–. The location of these different time intervals with respect to each other is sufficient for determining the temporal orientation of the event, independently of the temporal configuration of the eventuality denoted by predicational aspect. In contrast, EVENT-BASED APPROACHES state that the temporal location of events is influenced by the kind of predicate modified by tense and aspect marking, distinguishing between states and events. Additionally, under this approach, tense morphemes establish the temporal location the event while the role of grammatical aspect morphemes is to modify the basic kind of eventuality denoted by predicational aspect. Therefore, the model-theoretic notions underlying tense and grammatical aspect are not the same: tense is considered to locate events in time while grammatical aspect is taken to modify predicational aspect by contributing to the same distinctions made at this primitive level of aspect.

#### 1.3.2.2.1. EVENT-BASED THEORIES

Eventuality modification approaches are based on studies that establish parallelisms between predicational aspect classes and grammatical aspect morphemes. Under these approaches, the distinction between an event and a state is crucial for the temporal location of situations in time. Typically, events introduce new entities in the discourse that are ordered with respect to other situations previously established in the discourse following the specifications of tense and aspect morphology. Quite the opposite is what happens with states, which do not introduce new entities but are typically interpreted as simultaneous with other events in the discourse. Thus, grammatical aspect morphemes are compared to the different predicational classes. For example, IPF morphology (English progressive, for Hinrichs, 1989; French

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theories correspond both to phasic theories of grammatical aspect and boundedness theories of grammatical aspect.

*imparfait* for Kampf & Rohrer, 1983; and Polish imperfective for Piñón, 1995) is compared to states and PF morphology (French *passé simple* for Kampf & Rohrer, 1983; and Polish perfective for Piñón, 1995) is compared to events, based on the observation that in the narratives PF and events move the story line, whereas IPF and states typically provide background information. Therefore, the basic idea that event-based approaches propose is that aspect morphemes are operators that modify the aspectual structure of the predicate mapping an event of one type (state, process or event in classification in Table 1.3, punctual or durative) into another type of event (state, process or event, durative or punctual).

One of the first systems proposed in that sense was Moens & Steedman's (1988) temporal ontology and coercion network. They proposed an ontology of events based on the notions of causation and consequence in which the cognitive representation of events encodes inherent *contingent* relations of a goal event, or 'culmination', a 'preparatory process' by which it is accomplished, and a 'consequent state' (41). The different kinds of events encode one, two or three of these subparts of the 'nucleus', and natural-language categories like aspects or are argued to change the temporal/aspectual category of propositions by adding, subtracting or iterating any of these subparts of the 'nucleus':

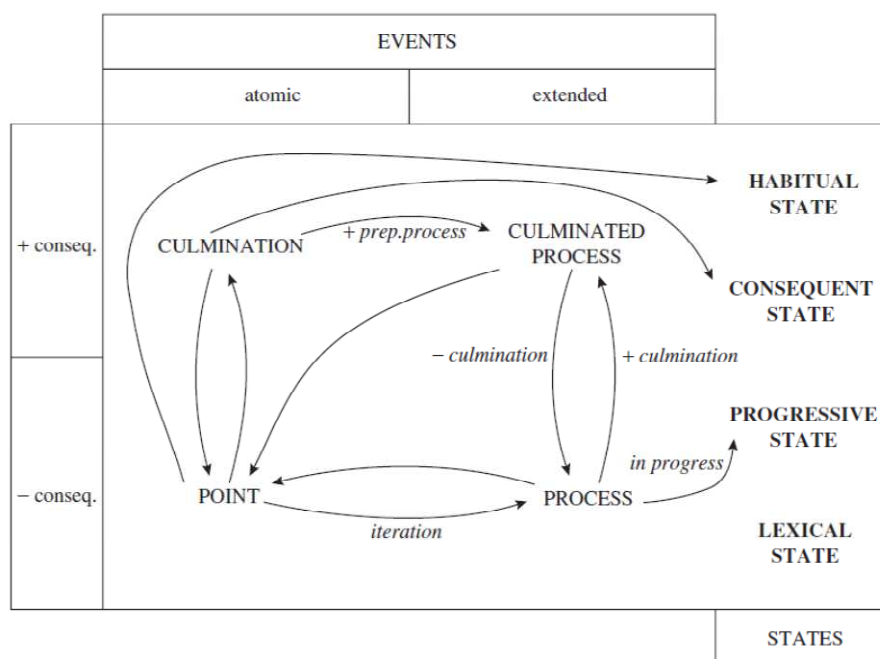


Figure 1.1: Transition network of type coercion. Moens & Steedman (1988: 18)

Therefore, PROG takes processes as its input and produces as output a process that is ongoing at the RefT. Whenever the input is not a process, it is coerced into a process. Punctual events are coerced into processes via iteration (122); accomplishments are coerced into processes by cutting out the culmination and the consequent state leaving out the preparatory process (123a) or by iterating the whole event (123b); achievements are coerced into processes by addition of a preparatory process and the removal of the culmination (124):

(122) Harry is hiccupping.

(123) a. Roger was running a mile  
b. Roger was running a mile last week. Now he's up to three.

(124) Harry was reaching the top

[Examples from Moens & Steedman (1988: 18-19)]

PERF is claimed to take culminations as input and indicate that the relevant state holds. Whenever the input is not a culmination, it is coerced into a culmination. For example, a process or an activity can be coerced into a culmination if a relevant consequent state results:

(125) John has worked in the garden.

Additionally, Moens & Steedman (1999) observed that tenses do not behave completely like anaphors but like nouns: in a discourse, the referent of an anaphor does not change in the discourse (i.e. the meaning of *she* is always the same referent), but in successive conjoined clauses the temporal referent of the tense moves on from the time originally established by the adjunct in some cases (126a) but not in others (126b):

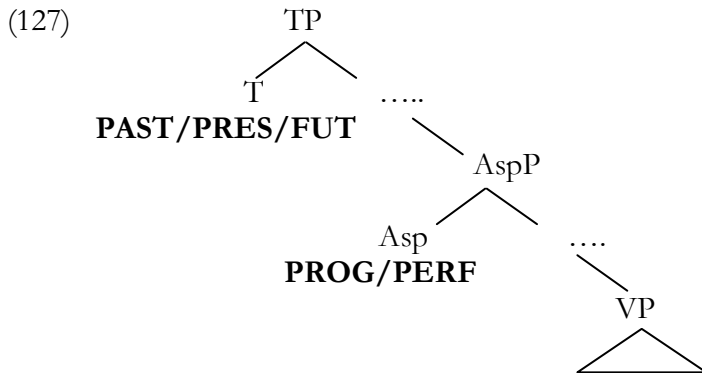
(126) a. At exactly five o'clock, Harry walked in, sat down, and took off his boots.  
b. At five o'clock, my car started and the rain stopped.

[Examples from Moens & Steedman (1988: 22)]

Moens & Steedman claim that this contrast happens because the events in (126a) have a consequent state that events in (126b) lack. Thus, the structure of the event influences the temporal location of the event introduced by tense.

Based on Moens & Steedman's (1988) system of grammatical aspect, de Swart, (1998) and de Swart & Verkuyl (1999) treat tense and grammatical aspect morphemes as semantic operators. The different tense and aspect operators

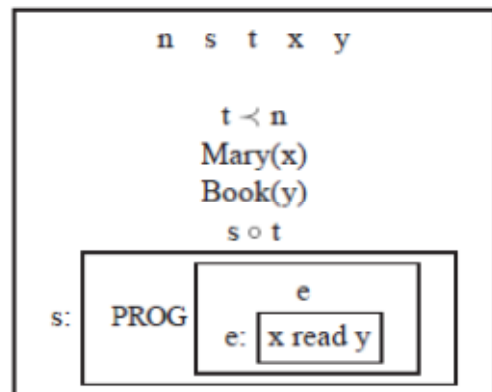
organized syntactically in a hierarchical way –in accordance to the hierarchy in (1)- in the following general syntactic structure:



The Tense head node is occupied by a tense operator that introduces existential closure over the set of eventualities and maps the event to the time axis by ordering its location time ( $t$ ) with respect to the speech time ( $n$ ). The Asp head node is filled by an aspectual operator that ‘maps sets of eventualities (of a certain type) onto sets of eventualities (of some possible other type)’ (Kamp and Reyle, 1993: 103): The final output of the eventuality modification consists of states or events that are introduced into the Discursive Representation Structure (DRS) following the standard construction rules defined by Kamp & Reyle (1998): events are included in the location time  $t$  ( $e \subseteq t$ ), while states and processes overlap with  $t$  ( $s \circ t$ ).

For example, PROG is an operator that maps dynamic descriptions into state descriptions.

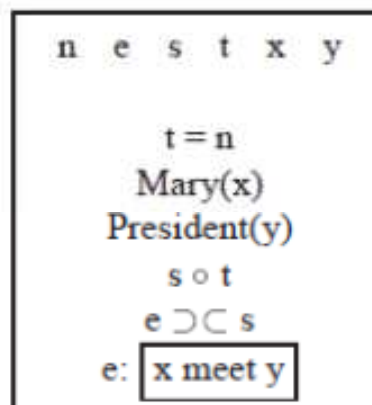
- (128) Mary was reading a book  
 [PRES[PROG[Mary read a book]]



[From de Swart & Verkuyl, (1999: 108)]

Similarly, PERF maps events into states, but it does so by introducing a result state that starts when the eventuality ends. The condition  $e \supset \subset s$  (e ‘abuts’ s) means that the result state starts right at the end of the event.

- (129) Mary has met the president  
[PRES[PERF [Mary meet the president]]



[From de Swart & Verkuyl, (1999: 107)]

These aspectual operators are interpreted at the level of grammatical aspect or ‘outer aspectuality’, and are independent of tense: they are compatible with past, present or future tense. In principle, these operators can be applied recursively:

- (130) a. Jane has been writing a letter  
b. PRES [ PERF [ PROG [Jane write a letter]]]

[From de Swart & Verkuyl, (1999: 108)]

However, operators impose certain constraints in respect to what kind of eventualities they take as input and these constraints block recursivity. For example, PROG only takes dynamic eventualities as input and therefore the following combinations are ungrammatical because they force PROG to apply to states:

- (131) a. \*Jane was having written a letter  
b. \*PAST [PROG [PERF [Jane write a letter]]]

- (132) a. \*Jane was being writing a letter  
b. \*PAST [PROG [PROG [Jane write a letter]]]

Nonetheless, sometimes when there is a conflict between the type of eventuality and the aspectual constraints of the aspectual operators or the aspectual and temporal modifiers, the basic aspectual type of the eventuality can be changed without explicit markers, as long as the context supports the meaning effects associated with the aspectual change. Such changes are governed by a contextual reinterpretation process called coercion (Csirmaz, 2004, de Swart and Verkuyl, 1999, Moens and



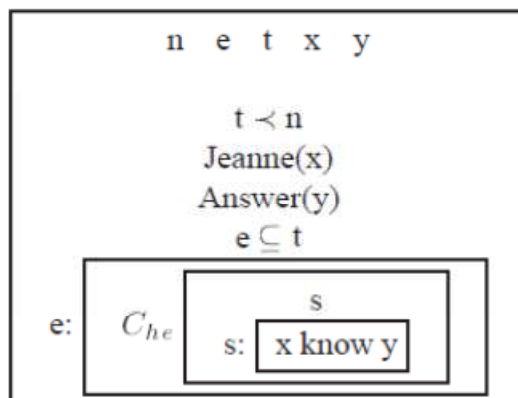
Steedman, 1988). Coercion, unlike grammatical aspect operators, does not have a manifestation in syntax or morphology and ‘it is governed by implicit contextual reinterpretation mechanisms triggered by the need to solve aspectual conflicts’ (de Swart & Verkuyl, 1999: 112). States can be coerced into events by emphasizing the starting point of the event and giving an inchoative meaning (133a); events can be coerced into states by giving an iterative (133b) or a habitual reading (133c).

- (133) a. Fred suddenly knew the truth  
 b. Fred coughed for ten minutes  
 c. For years, Fred walked to school

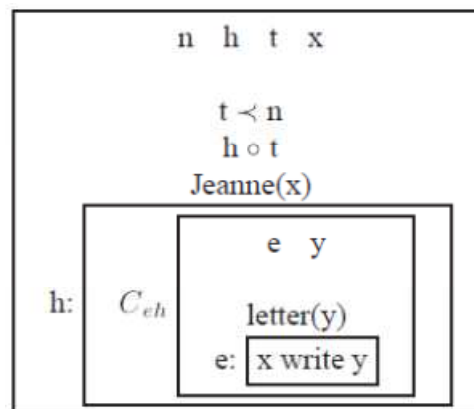
[From Csirmaz (1998)]

In addition to aspectual operators, in some languages such as Romance languages, the aspectual system also operates at the Tense node. These languages have morphemes that encode temporal and aspectual information in one morpheme. Both French *Passé simple* and Spanish *Pretérito indefinido* encode tense and aspect in the same morpheme. According to Kamp and Rohrer (1983), they introduce events into the DRS, in contrast to French *Imparfait* or Spanish *Pretérito imperfecto* that introduce states, or states or processes, following de Swart & Verkuyl (1999). Therefore, under the analysis of de Swart (1998) and de Swart & Verkuyl (1999), these tenses are treated as aspectually sensitive past tense operators: PF past tenses select (telic) events as their input, while IPF past tenses select activities or states as their input. Whenever this condition is not satisfied, coercion processes occur to accommodate the eventuality to the kind of input selected by the tense: in (134) the coercion operator  $C_{he}$  introduces the necessary event variable  $e$  to satisfy the input condition on the *Passé Simple*; in (135) the coercion operator  $C_{eh}$  satisfies the input restriction of the *Imparfait* that requires an homogeneous eventuality (activity or state) as an input.

- (134) (Soudain), Jean sut la reponse  
 (Suddenly), Jean know<sub>PF</sub> the answer  
 ‘(Suddeny), Jean knew the answer’  
 [PAST [ $C_{he}$ ][Jean know the answer]]



- (135) Jeanne *écrivait* une lettre  
 Jeanne write<sub>IPF</sub> a letter  
 'Jeanne was writing a letter'  
 [ PAST [ C<sub>ch</sub> [ Jeanne write a letter ] ] ]



[From de Swart, (2005)]

A similar proposal is made by Arosio (2010, 2006), who argues that present and past IPF tenses require their complements to be temporally homogeneous and past PF tenses require their complements to be temporally non-homogeneous, what explains their combination patterns with *since*-adverbials and *for*-adverbials.

#### 1.3.2.2. INTERVAL-BASED THEORIES

The characteristics of the predicate modified by tense and grammatical aspect morphology are claimed to be crucial for the temporal location of events in event-based theories of grammatical aspect.

Interval-based theories of tense and grammatical aspect (Demirdache and Uribe-Etxebarria, 2000, Demirdache and Uribe-Etxebarria, 2004, 2005, 2007, 2008a, 2008b, 1997, Hornstein, 1990, Klein, 1994, Klein, 1995, 2008, 1947, a. o.) depart directly from Reichenbach's (1947) system of tense in which three temporal intervals, the Speech Time (S), the Reference Time (R) and the Event Time (E) are ordered with respect to each other.

Reichenbach (1841), developing an idea originally proposed by Jespersen (1924)<sup>14</sup>, proposed that the tense system can be understood as a predication not over two times –the 'now' of the utterance (the speech time) and the 'then' of the event (the event time), but as a predication over three times: the speech time (ST), the reference time (RefT) and the event time (EvT). The ST can be the speaker's time

<sup>14</sup> Actually, Andrés Bello (1841, 1847) had already developed a three temporal time system similar to that of Reichenbach for Spanish.



S as referring to the time of the speech could not account for the relative uses of tenses, where the reference of the tense is anchored to the event on the matrix sentence or to some other relevant time interval in the discourse. Therefore, it has been proposed (Comrie, 1976, Klein, 1994, among many others) that in the case of deictic tenses in main clauses the S time refers to the time at which the utterance is made, and in the case of anaphoric tenses and temporal connectives the S refers to some other reference time mentioned in the discourse. Therefore, the Speech Time (henceforth ST) has also been referred to as utterance time (UtT) (Comrie, 1976, Klein, 1994) .

Second, two different ordering configurations are distinguished: one that corresponds to the ordering of ST and RefT, that is expressed by tense morphology, and one that corresponds to the ordering of RefT and EvT, that is marked by grammatical aspect morphology. The distinction of two different orderings in tense and aspect comes from Comrie's (1990) and Hornstein's (2002) observation that in some tenses ST and EvT are unordered with respect to each other, as in the case of future perfect<sup>15</sup> that can have the three possible interpretations in (139). These three different interpretations can be captured by the division of the temporal orderings in two different temporal relations as in (140)

- (139) John will have left  
 a. ST\_\_EvT\_\_RefT  
 b. ST, EvT\_\_RefT  
 c. EvT\_\_ST\_\_RefT

- (140) John will have left  
 a. EvT\_\_RefT and ST\_\_RefT

Third, more fine-grained relations were proposed to account for the meaning of PF and IPF. On the one hand, at the level of predicational aspect, Olsen (1997) proposed a more detailed structure of events distinguishing a nucleus of the event (the period during which the event is developing or existing) and a coda (the period at which the nucleus terminates). PF establishes a simultaneous relation of the RefT with the coda of the event, and therefore it indicates that the event finished, while

<sup>15</sup> For more arguments, see Hornstein 1990, chapter 3.6

the IPF establishes a simultaneous relation of the RefT with the nucleus of the event, leaving undetermined whether the event was completed or not. On the other hand, at the level of grammatical aspect, Klein (1994) and subsequent work (Demirdache and Uribe-Etxebarria, 2008b, Smith, 1991, a. o) proposed a more complex definition of the simultaneity relation by specifying it as an inclusion relation of the RefT and the EvT. Two inclusion relations are defined<sup>16</sup>:

- (141) a. PF                    RefT  $\subseteq$  EvT  
       b. IPF                    RefT  $\supseteq$  EvT

For the PF, the EvT is included in the RefT, the interval for which the speaker makes the assertion (141a). Therefore, the event is 'seen from outside' and the boundaries of the event are visible. For the IPF, the inverse relation holds (141b): the RefT is included within the EvT and an 'inside perspective' is taken: the assertion is made about a narrow temporal interval of the event that excludes its endpoints. These relations explain the entailment patterns of the Imperfective Paradox in examples (82). The inclusion relation in (141b) is also taken to be the meaning of the progressive (Dowty, 1979).

Additionally, interval-based theories on grammatical aspect have tried to account for non-overt morphology and the so-called neutral aspect (see section 1.3.1.1). Neutral aspect does not assert completion when combined with telic verbs (94), but it generates both sequential readings –like PF– and simultaneous readings –like IPF– (95). This kind of aspect has been analyzed in Smith (1997) as establishing an inclusion relation of the RefT and an interval that includes only the initial boundary of the event. For Demirdache & Uribe-Etxebarria (2007), the relation of RefT and EvT in non-overtly marked grammatical aspect forms (simple tenses) is established via anaphora. Anaphora between individual-denoting noun phrases is established via either covaluation or (semantic) binding:

- (142) Only Kim loves his father.  
       a. Covaluation:        Only Kim  $\lambda x[x \text{ loves his father}] \ \& \ \text{his} = \text{Kim}$   
       b. Binding:            Only Kim  $\lambda x[x \text{ loves } x\text{'s father}]$

<sup>16</sup> Borik (2002) defines PF and IPF in a slightly differently than (141):

Perfective:         $S \cap R = \emptyset \ \& \ E \subseteq R$

Imperfective:     $\neg (S \cap R = \emptyset \ \& \ E \subseteq R)$ , namely,  $S \cap R \neq \emptyset \vee E \not\subseteq R$



	b. Siempre ha vivido solo. 'He has always lived alone'	Universal
	c. Ha vivido solo últimamente/ durante dos meses. 'He has lived alone lately/ for two months'	Universal/existential
	d. Ha vivido solo (por lo menos) desde 1998. 'He has lived alone at least since 1998'	Universal
(146)	a. Ha ido a Buenos Aires (dos veces en su vida) 'Has been to Buenos Aires (twice in his life)'	Existential
(147)	b. Ha vivido solo (desde la muerte de su padre) 'Has lived alone (since his father's death)'	Universal

[Examples from Laca (2003: 4, 5)]

In fact, the importance of the kind of eventuality has lead Portner (1997) to establish a parallelism between present perfect and the behavior of states vs. events in the discourse:

- (148) a. John said that Mary read his thesis  
b. John said that Mary was ill

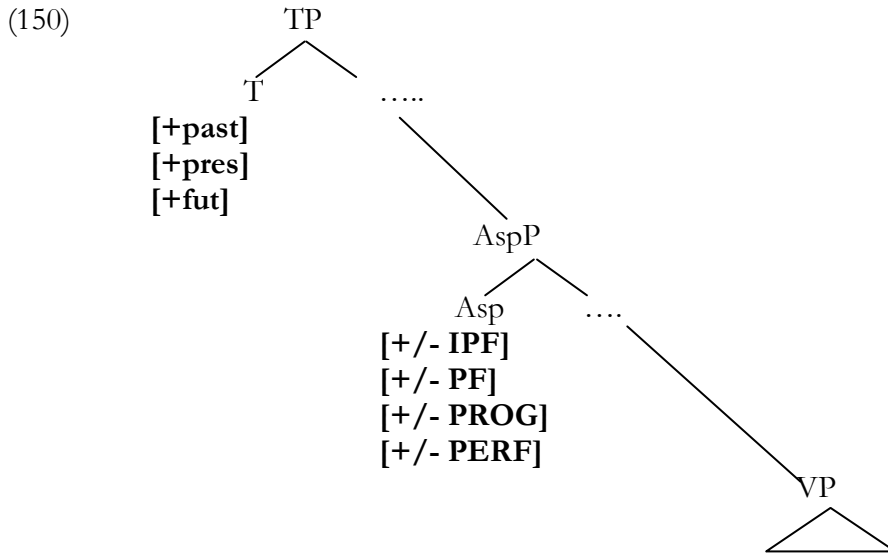
If the eventuality in the embedded clause is stative (148a), it can precede or be simultaneous to the event in the matrix clause (the saying event); if the eventuality in the embedded clause is eventive (148b), then it can only precede the event in the matrix clause (the saying event). This is similar to the readings of the perfect:

- (149) a. Mary has read John's thesis  
b. Mary has been ill

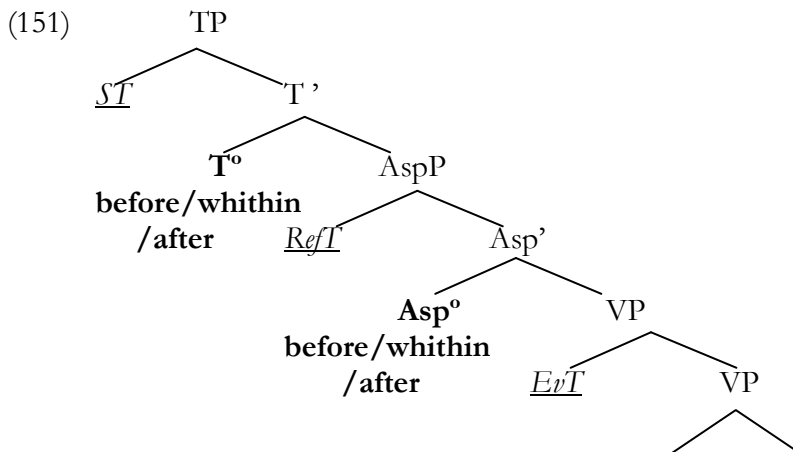
For (149a), the event can only be previous to the ST, while for (149b) Mary's illness can also be simultaneous to the ST in a universal or continuative reading.

Interval-based approaches have also been represented syntactically in a hierarchical structure similar to that of (127), but, for interval-based approaches, the different nodes in the structure are related to the three temporal intervals in Reichenbach (1947) theory: TP corresponds to the determination of the ST, AspP to the RefT and VP to the EvT.

Two different kinds of elements are claimed to occupy the Asp head and the Tense head: features or predicates. On the one hand, following the idea that linguistic objects are nothing but feature aggregates (Chomsky, 1993) tense and aspect morphemes are analyzed as features (Enç, 1987, Olsen, 1997, Smith, 1991):



On the other hand, taking seriously the referential status of tenses in semantic theory (Demirdache and Uribe-Etxebarria, 2000), tense and grammatical aspect are represented as spatiotemporal predicates that project their time-denoting arguments into the syntax. Tense and aspect nodes specify the ordering relation of those times introduced by their arguments (Demirdache and Uribe-Etxebarria, 2004, Demirdache and Uribe-Etxebarria, 2005, Demirdache and Uribe-Etxebarria, 2007, Demirdache and Uribe-Etxebarria, 2008b, Stowell, 1995, Stowell, 2007, Zagona, 1990):



[Adapted from Demirdache&Uribe-Etxebarria, (2008:333)]

The representation of time intervals as arguments of spatiotemporal predicates eases the uniform treatment of the anaphoricity of tense and aspect. The time intervals projected into the syntax as arguments, are treated as Zeit Phrases (Reichembach, 1947, Stowell, 2007), the temporal counterpart of DPs. These arguments of tenses



and aspects, just as any DP, can be restrictively modified and enter into anaphoric dependencies.

As a summary, there are two approaches analyzing the function of tense and grammatical aspect morphemes. On the one hand, event-based approaches to grammatical aspect claim that the kind of event denoted by the predicate is relevant for establishing its temporal location: states and homogeneous events (activities) typically establish simultaneous relations that don't move the narration forward; events, on the contrary, generate sequence of events that move the narration forward. Based on the parallel behavior of PF and PERF and events, and IPF and PROG with states in their behavior in the discourse, these approaches claim that grammatical aspect morphemes modify the basic eventuality they are attached to. Two kinds of modifications can be made: semantic modifications by the use of semantic operators that are expressed by grammatical aspect morphemes, or coercion changes that are carried out by covert operators that are inserted when the requirements of certain operators do not fit with the properties of the input. Under this view, the characteristics of the predicate modified by tense and grammatical aspect morphology are claimed to be crucial for the temporal location of events, contrary to interval-based approaches.

On the other hand, interval-based approaches to grammatical aspect try to account for the semantic behavior of grammatical aspect morphemes by establishing a parallelism between tense and aspect morphology: temporal and aspectual morphemes are both devoted to the temporal location of the event, tense specifies the deictic location of the situation while aspect determines the temporal perspective of the event. Taking Reichenbach's (1991) system of tenses, tense is claimed to determine the temporal location of the RefT with respect to the ST, while grammatical aspect determines the temporal location of the EvT with respect to the RefT. Under these approaches, Reichenbach's system is enriched to account for the different meanings of the grammatical aspect category by establishing inclusion relations of the RefT and the EvT, by creating new intervals like the XN interval or by taking into account the properties of the predicational aspect class of the predicate. Additionally, it is also represented syntactically by recurring to a

hierarchical structure of a Tense node (that orders RefT with respect to EvT) and an Aspect node (that orders EvT with respect to RefT) whose nodes are either occupied by features or predicates of ordering relations.

### 1.3.3. Tense and aspect and pragmatics

Grammatical aspect and tense morphology have pragmatically conventionalized uses: their semantic meaning is often pragmatically enriched to convey further meanings that are not specified in their semantics.

As Smith (1997) points out, the information conveyed by grammatical aspect can be interpreted positively or negatively. Positive emphasis draws attention to the information made visible by the grammatical aspect marker; negative emphasis, in contrast, draws attention to what is not visible. These different emphases affect the interpretation of IPF forms. For example, a sentence like (152), is interpreted under positive emphasis as an answer to the question "what is María doing?". In this case, IPF presents a situation as ongoing. However, (152) can also be interpreted under negative emphasis, as when it is the answer of a question like "shall we have dinner now?". In this case, IPF draws attention to the absence of endpoints of the events.

- (152) María está haciendo la cena  
 María bePRES doGER the dinner  
 'María is cooking dinner'

Two different discourse principles are active for the positive and negative emphasis: the principles of *minimality* and *maximality*. Following the principle of *minimality*, speakers say only as much as they need to say, favoring the positive emphasis; if speakers follow the principle of *maximality*, they should say as much as they can, favoring the interpretation of the forms under the negative emphasis.

The pragmatic enrichments of IPF described by Smith (1991) are reminiscent of the Prague School about contrastive meaning. Another approach in this same line of research is Olsen's (1997) analysis of aspect as privative features. Under this analysis, predicational aspect classes are defined with respect to the features of [+durative], [+dynamic] and [+telic]:

- (153) Features for predicational aspect:
- If a verb is [+durative] it denotes a temporal interval.
  - If a verb is [+dynamic] it denotes a change and so it presupposes an interval.
  - If a verb is [+telic] it denotes an end.

Predicates have a temporal structure that consists on a nucleus and a coda, as mentioned in section 1.3.2.2.2. The features [+durative] and [+dynamic] specify the properties of the nucleus, while the feature [+telic] specifies the coda.

- (154) Predicational classes and the features of the nucleus and the coda:

Class	NUCLEUS	CODA
State	[+durative]	
Activity	[+durative] [+dynamic]	[+telic]
Accomplishment	[+durative] [+dynamic]	[+telic]
Achievement	[+dynamic]	[+telic]
Semelfactive	[+dynamic]	
Stage-level state	[+dynamic]	[+telic]

Similarly, grammatical aspect is also analyzed as a combination of privative features that specify the coincidence relation of the EvT and the RefT at the different components of the event: at the nucleus (IPF) or at the coda (PF).

- (155) Privative features for grammatical aspect
- [+imperfective] specifies  $[ET \cap RT]$  at nucleus
  - [+perfective] specifies  $[ET \cap RT]$  at coda

Predicational aspect and grammatical aspect features are privative and not equipollent. This implies that the semantic interpretation of aspect is defined as monotonic composition of features in the syntax: “features unmarked on verbs may be marked by other sentential constituents, whereas marked features must contribute to aspectual interpretation at every syntactic level” (Filip, 2000: 45, Olsen, 1997: 45). For example, the PF establishes a simultaneous relation of the RefT and the coda of the predicate. Verbs unmarked for [+telic], are interpreted as reaching an arbitrary end (156).

- (156) a po-spal  
*PF-sleep*  
 ‘to sleep for a short while’

Czech

[Example from Filip (1989: 21)]

- b. Juan nadó ayer  
*Juan swim-PF yesterday*  
'Juan swam yesterday'

Furthermore, the privative analysis predicts that “the statistical prominence of the [-feature] interpretation may be attributed to the Gricean maxims of quantity and quality (Olsen, 1997). A hearer may infer [-feature] from the fact that the speaker did not use a verb asserting [+feature] if she could. Since [-feature] is an implicature, it is cancelable in the appropriate context.” (Olsen, 1997: 30-31). For example, the IPF of a [+telic] situation denotes the progress towards an inherent end, but as the coda is not asserted, whether the coda is reached or not is left to pragmatic implicature. In past IPF tenses, the Gricean maxim of quantity seems to generate and implicature that the situation did not continue: if a speaker knew that an end was reached, she would have asserted it; since she did not, the hearer may infer that the end has not reached. However, the incomplete interpretation is an implicature and not part of the imperfective semantics, since both continuing and non-continuing interpretations are at once possible and cancelable for the [+telic] verbs (Bohnmeyer and Swift, 2004: 84).

Gricean maxims and Scalar Implicatures are also proposed to determine the meaning of aspectually unmarked forms in languages without aspect (Bello, 1847). In languages with unmarked aspect, telic predicates tend to be interpreted as perfective, while atelic predicates tend to have an imperfective interpretation.

Therefore, grammatical aspect and tense morphology have pragmatically conventionalized meanings that delimit their logic meanings when they are commonly used in language. Their semantic meaning can be pragmatically enriched and these enrichments depend on the other forms available in language to which a certain form competes and on the markedness of certain features.

### 1.3.4. The Spanish tense and aspect inflectional system

Verb inflectional morphology in Spanish marks person and number agreement with the subject of the sentence<sup>17</sup> and conveys mode, tense and aspect information<sup>18</sup>. We will focus on the different tense and aspect distinctions that, as proposed by traditional and descriptive grammars, belong to the indicative mode.

The first issue encountered when studying the Spanish verb inflection is how to distinguish and delimit which forms belong to the inflectional system. Most of the scholars, starting with Bello (1847: 84), and in the successive descriptive grammars written by the Spanish Academy of the Language (*Real Academia de la Lengua* or *RAE*), consider simple forms and periphrastic perfect as part of the Spanish tense-aspect inflectional system. Synthetic forms such as the *presente simple*, the *pretérito imperfecto*, the *pretérito indefinido*, etc., are formed by the verb stem and a suffix that conveys tense (past, present or future) and aspect information (perfective or imperfective) as well as person and number agreement with the subject. The periphrastic forms, perfect forms such as the *pretérito perfecto simple*, the *pretérito pluscuamperfecto*, etc., are formed with the auxiliary *haber* –to have– and the perfect participle. In these forms, the auxiliary bears tense (past, present or future) and aspect information (perfective or imperfective) as well as person and number agreement with the subject.

The second question for the study of tense-aspect inflectional system is how to describe the meaning and use of the different forms. Most of the descriptions of Spanish tense and aspect inflectional system focus on the tense category. Tense is a grammatical category that establishes a deictic relation between the time of the event ( $T_{EV}$ ) and the deictic center ( $T_0$ ), which is normally the moment of speech, though it can also be some other moment in time salient in the discourse. There are three

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<sup>17</sup> Along this section, we will present forms only in the third person singular, which will be the person and number agreement used in the experiments.

<sup>18</sup> Additionally, there are three different conjugations or verb groups –1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>– marked by the thematic vowel (TV) –*a*-, –*e*- or –*i*- and two different stems (a past stem and a present/future stem) (RAE 2009: 45-50).

possible temporal relations with respect to this  $T_0$ : a precedence relation (PAST), a simultaneity relation (PRES) and a subsequence relation (FUT):

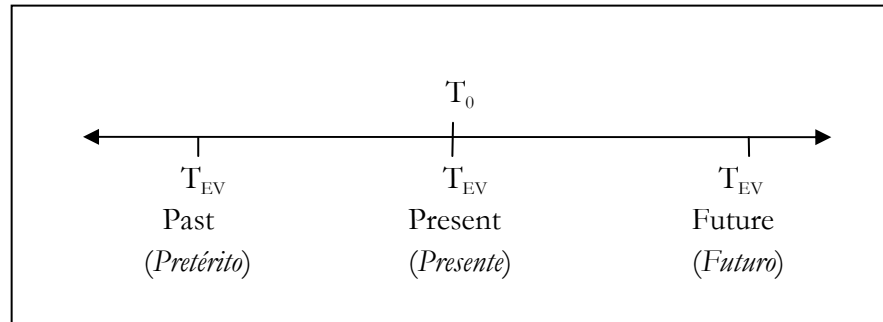


Figure 1.2: Time line representation of past, present and future.

The Spanish verbal paradigm contains more than one form to express precedence (past), simultaneity (present) and subsequence (future) relations, and thus, more distinctions in the tense system are necessary to describe and distinguish the array of tense forms. There are mainly two approaches to account for the distinction of the different past, present and future forms of Spanish: A) a temporal approach in which more temporal referents are added to the system and relative vs. absolute forms are distinguished and B) an aspectual approach that differentiates perfect, perfective and imperfective forms. These two approaches roughly correspond to the ones described in chapter 1, section 1.3.2: the INTERVAL-BASED APPROACHES and the EVENT-BASED APPROACHES, respectively.

Within the temporal approach, some scholars (Comrie, 1985: 226, Gili Gaya, 1943, Pérez Saldaña, 2004, Veiga Rodríguez and Rojo Sánchez, 1999, a.o.) resort to an increase of time referents in the discourse: tenses can be absolute, ordering the time of the event directly with respect to the  $T_0$ , or they can be relative, locating the time of the event with respect to some other time ( $T_{REF}$ ), which is itself ordered as precedent, simultaneous or subsequent to the  $T_0$ . Additionally, the event time  $T_{EV}$  is also ordered with respect to the  $T_{REF}$  as precedent, simultaneous or subsequent, as we can see in Figure 1.3:

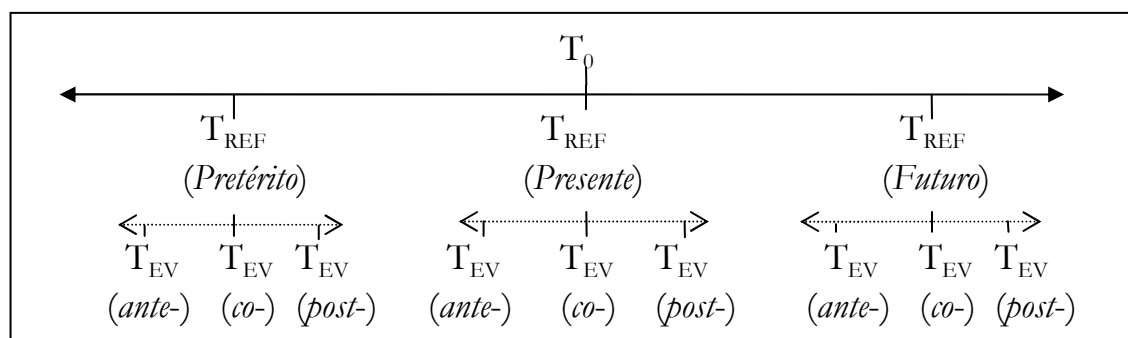


Figure 1.3: Time line representation of the possible relative tenses.

This enrichment of the system can account for the forms in Table 1.4:

REFERENCE TIME	PRIMARY TEMPORAL RELATION		
	Precedence	Simultaneity	Subsequence
T <sub>0</sub>	<i>Cantó</i>	<i>Canta</i>	<i>Cantará</i>
T <sub>REF</sub> preceding T <sub>0</sub>	<i>Había cantado</i>	<i>Cantaba</i>	<i>Cantaría</i>
T <sub>REF</sub> simultaneous to T <sub>0</sub>	<i>Ha cantado</i>		
T <sub>REF</sub> subsequent to T <sub>0</sub>	<i>Habrá cantado</i>		
T <sub>REF1</sub> subsequent to a T <sub>REF2</sub> preceding T <sub>0</sub>	<i>Habría cantado</i>		

Table 1.4: Temporal reference of Spanish tenses.

(Adapted from Carrasco, 2000: 2884)

Departing from the aspectual approach, other scholars (García Fernández, 1999, Veiga Rodríguez and Rojo Sánchez, 1999) describe the Spanish tense-aspect inflectional system resorting to aspectual categories and thus distinguishing, at least<sup>19</sup>, perfect (*perfecto*), perfective (*perfectivo o aoristo*) and imperfective (*imperfecto*) tenses: perfective tenses present the event from outside, without paying attention to its parts while imperfective tenses look at the action from inside, taking into account its internal structure. *Cantó*, *ha cantado* and *había cantado* are perfective forms while *canta* and *cantaba* are imperfective forms. Additionally, perfect tenses give focus to the result of an action: they talk about the period of time that succeeds a situation.

<sup>19</sup> Carrasco Gutiérrez (1999) distinguishes four kinds of aspect: *Perfecto*, *Prospectivo*, *Perfectivo o Aorístico* and *Imperfectivo*- and García Fernández (1999) distinguishes these other four kinds of aspect: *Imperfecto*, *Perfectivo o Aoristo*, *Perfecto* and *Neutral*.

FORM	BELLO (1847)	GRAE (1931)	GIL GAYA (1943)	ESBOZO (1973)	GRAE (2014)	THIS DISSERTATION
<i>Canta</i>	Presente	Presente	Presente	Presente	Presente	Presente simple
<i>Cantó</i>	Preterito	Preterito indefinido	Preterito perfecto absoluto	Preterito perfecto simple	Preterito perfecto simple	Preterito indefinido
<i>Cantaba</i>	Co-preterito	Preterito imperfecto	Preterito imperfecto	Preterito imperfecto	Preterito imperfecto	Preterito Imperfecto
<i>Cantará</i>	Futuro	Futuro simple	Futuro absoluto	Futuro	Futuro simple	Futuro simple
<i>Cantaría</i>	Pospreterito	Potencial simple	Futuro hipotético	Futuro	Condicional simple	Condicional simple
<i>Ha cantado</i>	Ante-presente	Preterito perfecto	Preterito perfecto actual	Preterito perfecto compuesto	Preterito perfecto compuesto	Preterito perfecto
<i>Había cantado</i>	Ante-co-preterito	Preterito pluscuamperfecto	Preterito pluscuamperfecto	Preterito pluscuamperfecto	Preterito pluscuamperfecto	Preterito pluscuamperfecto
<i>Habría cantado</i>	Ante-preterito	Preterito anterior	Ante-preterito	Preterito anterior	Preterito anterior	Preterito anterior
<i>Habría cantado</i>	Ante-futuro	Futuro perfecto	Ante-futuro	Futuro perfecto	Futuro compuesto	Futuro perfecto
<i>Habría cantado</i>	Ante-pos-preterito	Potencial compuesto	Antefuturo hipotético	Condicional perfecto	Condicional compuesto	Condicional perfecto

Table 1.5: Labels of the different tense forms of Spanish depending on author.

(Adapted from García Fernández, 2004: 2883)



As we can see in Table 1.5, there is no unified terminology labeling the different forms in Spanish since the terminology varies depending on which criteria are taken into account for the classification (Bello, 1847)(Bello, 1847)(Bello, 1847)<sup>20</sup>: the distinction between absolute vs. relative (*absoluto* vs. prefixes such as *ante-/co-/pos-*), perfective vs. imperfective (*perfecto* vs. *imperfecto*) and synthetic vs. periphrastic (*simple* vs. *compuesto*). The lack of agreement in the terminology is related to the fact the classification and description of the Spanish tense system is still a discussed matter.

The forms in Table 1.5 are described in the different columns of Table 1.6 according to: (I) the relation of the T<sub>EV</sub> with respect to the deictic center (prior *pasado*, subsequent *futuro* or simultaneous *presente* to the deictic centre); (II) for temporal approaches, the deictic centre, which can be the T<sub>0</sub> for absolute tenses or the T<sub>REF</sub> for relative tenses which is prior *ante-*, simultaneous *co-* or subsequent *pos-* to the T<sub>0</sub> (García Fernández, 1999, Gili Gaya, 1943, Pérez Saldaña, 2004, a. o) and (III) for aspectual approaches, the aspect value of the form, *perfecto* or *imperfecto* (Carrasco, 2000, Comrie, 1985) and (IV) the distance at which the T<sub>EV</sub> is located with respect to the deictic centre. Additionally, the different use of the present perfect (*pretérito perfecto*) and the simple perfective past (*pretérito indefinido*) in some varieties of Peninsular Spanish can be defined in terms of degree of remoteness: forms like *ha cantado* refer to a recent past, while *cantó* refers to a remote past (Pérez Saldaña, 2004: 84). Furthermore, Spanish tense and aspect forms can also be classified depending on the kind of morphosyntactic configuration of the different forms: simple or synthetic forms –*Presente Simple*, *Pretérito Indefinido*, *Pretérito Imperfecto* and *Futuro Simple*– and periphrastic forms –*Pretérito Perfecto*, *Pretérito Pluscuamperfecto* and *Futuro*–.

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<sup>20</sup> See García Fernández, 2004 for an overview.

FORM	TIME REFERENCE	DEICTIC CENTRE	ASPECT	DISTANCE
Presente simple <i>Canta</i>	Present	T <sub>0</sub>	Imperfective	
Pretérito perfecto <i>Ha cantado</i>	Present	T <sub>0</sub>	Perfect	
	Past	T <sub>0</sub>	Perfective	Recent
Pretérito anterior <i>Cantó</i>	Past	T <sub>0</sub>	Perfective	Remote
Pretérito imperfecto <i>Cantaba</i>	Present of past T <sub>REF</sub>	Past T <sub>REF</sub>	Imperfective	
Pretérito pluscuamperfecto. <i>Había cantado</i>	Past of past T <sub>REF</sub>	Past T <sub>REF</sub>	Perfective	
	Past	T <sub>0</sub>	Perfect	
Futuro simple <i>Cantará</i>	Future	T <sub>0</sub>	Neutral	
Futuro perfecto: <i>Habrá cantado</i>	Future	T <sub>0</sub>	Perfect	

Table 1.6: Classification of Spanish tenses adapted from Pérez Saldaña, (1847: 226)

In addition to the forms in Table 1.5 and Table 1.6, there are other aspectual periphrases that are very productive in Spanish: *estar* ‘be’ + *gerund*, *llevar* ‘bring’+ *gerund*, *tener* ‘have’+ *past participle*, *ir a* ‘go to’ + *infinitive*, etc. Among them, the progressive periphrasis is so productive that it was included by Bello (2004) in the verbal paradigm as periphrastic forms like the perfect, composed by *haber* ‘have’+ *past participle*.

## (157) Progressive periphrasis

- |   |  |
|---|--|
| a. Está cantando<br><i>be<sub>PRES</sub> sing<sub>GERUND</sub></i><br>'Is singing'                                      | e. Había estado cantando<br><i>Have<sub>PAST</sub> be<sub>PARTICIPLE</sub> sing<sub>GERUND</sub></i><br>'had been singing'         |
| b. Estuvo cantando<br><i>be<sub>PAST.PF</sub> sing<sub>GERUND</sub></i><br>'has been singing'                           | f. Estará cantando<br><i>be<sub>FUT</sub> sing<sub>GERUND</sub></i><br>'Will be singing'   |
| c. Estaba cantando<br><i>be<sub>PAST.PF</sub> sing<sub>GERUND</sub></i><br>'Was singing'                                | g. Estaría cantando<br><i>be<sub>CONDIT.</sub> sing<sub>GERUND</sub></i><br>'Would be singing'                                     |
| d. Ha estado cantando<br><i>Have<sub>PRES</sub> be<sub>PARTICIPLE</sub> sing<sub>GERUND</sub></i><br>'has been singing' | h. Habría estado cantando<br><i>Have<sub>COND</sub> be<sub>PARTICIPLE</sub> sing<sub>GERUND</sub></i><br>'Would have been singing' |

Progressive periphrases are formed by the auxiliary verb *estar* ‘be’ + gerund. The auxiliary can be inflected in any of the forms in Table 1.5 and Table 1.6. The temporal orientation is given by the auxiliary.

In addition, Laca (2004) distinguished another kind of grammatical aspect periphrases: prospective periphrases formed by the verb *ir* ‘go’, the preposition *a* ‘to’ and the infinitive. These forms are also very frequently used in spoken language, but its productivity is more reduced than that of progressive periphrasis, as the auxiliary can only be inflected in two forms (Bardovi-Harlig, 2000):

(158) Va a cantar  
*Go<sub>PRES</sub> to sing<sub>INFINITIVE</sub>*  
 'Is going to sing'

(159) Iba a cantar  
*Go<sub>PAST</sub> to sing<sub>INFINITIVE</sub>*  
 'Is going to sing'

#### 1.4. SUMMARY AND CONCLUSIONS

There are three levels of temporal information of the events in language: predicational aspect, grammatical aspect and tense. Predicational aspect is related to the temporal constituency of events. Grammatical aspect is concerned with the speaker’s perspective on the events or situations, making reference to the whole event or just a subpart of it. Tense locates the event in time. These different levels of temporal information are distinct and are hierarchically organized in language, but they are intermingled and sometimes they are difficult to differentiate. However, two different domains can be distinguished: the level of predicational aspect, which is determined within the VP and the level of grammatical aspect and tense, which is determined by adverbs and functional morphology and is specified outside the VP.

Within the level of predicational aspect, different kinds of predicates can be distinguished depending on several features such as *stativity/dynamicity*, *telicity/atelicity* and *durativity*: STATES, ACTIVITIES, ACCOMPLISHMENTS, ACHIEVEMENTS or SEMELFACTIVES or just STATES, PROCESSES (activities) and EVENTS (accomplishments and achievements) have been proposed. Among the different

distinctions within the level of predicational aspect, the most important one is the distinction between telic and atelic predicates. Telic predicates refer to events that have an intrinsic endpoint and that are not homogeneous; on the contrary, atelic predicates are homogeneous and they do not denote an intrinsic endpoint. Telicity can be derived semantically by the introduction of a change of state or a thelos that delimits the event (for event-decompositional approaches) or by the presence of a bounded argument or a bounded path that delimit the event (for mereological approaches). These two ways of deriving telicity have been reconciled in new approaches to the semantics and syntax of predicational aspect such as Ramchand (2006) or Hay et al. (1999).

At the level of grammatical aspect and tense, two different theoretical approaches must be distinguished. On the one hand, interval-based approaches establish a parallelism between tense and aspect morphology: temporal and aspectual morphemes are both devoted to the temporal location of the event, tense specifies the deictic location of the situation by establishing the temporal location of the RefT with respect to the ST while aspect determines the temporal perspective of the event by ordering the EvT with respect to the RefT. On the other hand, event-based approaches to grammatical aspect claim that grammatical aspect morphemes modify the basic eventuality they are attached to, mapping the primary type of eventuality denoted by the VP into a predicate of some other type. The kind of event denoted by the predicate and the aspectual morphology is relevant for establishing the temporal location: states and homogeneous events (activities) typically establish simultaneous relations while events move the narration forward.

Although the two different approaches to predicational aspect try to explain the semantic composition of tense and aspect meanings, some of the meanings of the different categories might not be fully specified by syntax and semantics of the linguistic form, but they are derived from pragmatic enrichments. For example, it has been claimed that in some predicates telicity is not lexically specified but is derived from a pragmatic implicature. Additionally, the meaning of certain grammatical aspect forms depend on the other forms available in a certain language,

competing with them in terms of informativity and giving rise to the implicature that the meaning conveyed by the competing form does not hold. Such is the case of the IPF, which in certain contexts implies the lack of completion of the event.

The various semantic approaches to tense, grammatical and predicational aspect and the fact that some of the meanings commonly attributed to these forms are not semantically specified but derived by pragmatics have different theoretical implications for language acquisition which will be explained in chapter 2.

The focus of this dissertation is not to test the validity of the different approaches to predicational aspect, grammatical aspect and tense. Therefore, we will not follow any specific approach to predicational aspect (telicity) or grammatical aspect and tense but, instead, we will try to discuss the implications of our observations on children's knowledge of these categories for the different approaches.



## **CHAPTER 2**

### **TENSE AND ASPECT IN CHILD LANGUAGE.**

#### **PRODUCTION AND COMPREHENSION STUDIES**

##### **2.1. MAIN QUESTIONS**

One of the main challenges when acquiring a language is to determine how the specific language the child is acquiring conveys aspectual and temporal meanings. This is not an easy task. It requires dealing with very abstract meanings, such as certain logical relationships between events –causation, completion, precedence, etc.–, temporal displacement –reference to remote past or future time intervals which are independent of the here-and-now of the conversation–, etc. To deal with these abstract meanings, the child is required to have a cognitive maturity that may be independent of language. In addition, the child has to parse the input in order to identify which are the relevant linguistic units that convey tense and aspect information and relate them to their abstract and specific meanings. Besides that, the child also has to manage the principles that rule the use of the different forms in the discourse.

The study of the acquisition of T&A marking is related to two more general research fields on children's development: the study of children's conceptual knowledge and the investigation on how children proceed in the task of parsing the input, identifying the relevant units and relating these units with their proper meaning. To discover the main strategies that children use to establish the proper form-to-meaning mapping of the language they are acquiring, three main questions arise:

- Do children have the same conceptual and semantic temporal system as adults? If not, what determines the transition between the child and the adult pattern?
- Do children posit the same form-to-meaning mappings than adults? If they do not, what are the differences between children's and adults' mappings? What causes these differences? What determines the transition between the child and the adult pattern?
- Is the success or failure in acquiring the proper form-to-meaning association dependent on the specific characteristics of the language being acquired? If so, what facilitates or hinders the acquisition of the correct form-to-meaning associations?

Studies based on early spontaneous production data have found that, crosslinguistically, children's production of T&A morphemes is limited to certain kinds of predicates. These production patterns have led to a series of hypotheses that suggest that the early production of T&A morphemes is dependent on the predicational aspect of the predicate. Section 2.2 will be focused on the findings of longitudinal studies of children's spontaneous speech at early stages discussing tense, grammatical aspect and predicational aspect altogether, presenting first the data (section 2.2.1) and then the different hypotheses that have been proposed to explain those data (sections 2.2.2 and 2.2.3). Section 2.3 will present the results of various comprehension studies. Comprehension studies have tried to test tense, grammatical aspect and predicational aspect separately in order to discover what knowledge do children have about the information conveyed at these three different levels of temporal information. Therefore, findings on comprehension studies will be presented in separated sections: predicational aspect in section 2.3.1; grammatical aspect in section 2.3.2; and tense in section 2.3.3. Finally, findings based on comprehension and production data will be compared and summarized in section 2.4.



## 2.2. PRODUCTION OF TENSE AND ASPECT MORPHOLOGY AT EARLY STAGES

### 2.2.1. Defective aspectual and tense marking in early child speech

There are two<sup>21</sup> (Grinstead et al., 2009a) empirical observations on the spontaneous production of tense and aspect morphology in early child language:

First, in some languages such as Dutch or German, children start producing verbs in their infinitival form instead of inflecting them with the corresponding aspectual, temporal and agreement markers. For Spanish, the same phenomenon has been described but the bare stem does not take the form of an infinitive but the form of a 3rd personal singular present tense (Ezeizabarrena, 2002, Grinstead et al., 2014, López Ornat, 1997). These occurrences of non-finite main verbs in child speech are known as Root Infinitives (RIs). For constructivist approaches, who claim that the use of verbal morphology is gradually acquired by analyzing the input, these non-inflected forms are instances of children's first pre-grammatical productions (Gathercole et al., 1999, Rizzi, 1993/1994, Sebastián et al., 2004). In contrast, generative approaches to language acquisition have given a lot of attention to the lack of verbal morphology in child speech and have tried to relate this phenomenon to a syntactic deficit (Hyams, 1996, Ingram and Thomson, 1996, Wexler, 1998) a processing failure (Avrutin, 1999, Schütze and Wexler, 1996), to children's tendency to use economic forms that do not require a heavy computational processing load (Grinstead et al., 2014, Wexler, 1994) or to difficulties with discourse-sensitive constructions that require an interaction between grammar-internal domains and the grammar-external domain of discourse pragmatics (Wagner, 2012).

Second, the first instances of temporal and aspectual morphology in child language correspond to the following two classes:

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<sup>21</sup> There is another well known fact on children's production of Tense and Aspect morphology: the phenomenon of overregularization. Children's productive use of verbal morphology goes through a stage in which the rules of word formation for T&A (and agreement) morphology are extended to irregular forms. Although overregularization is observed at the stage when verbal morphology is determined by the aspectual value of the predicate, there is no clear pattern of regular-irregular dissociation with respect to the aspectual class of the predicate (Shirai, 2010). This seems to suggest that the phenomenon of overregularization is related to a different challenge in child development of T&A categories: the acquisition of the rules of word formation.

	Class 1 (completive)	Class 2 (ongoing)
<i>Aktionsart</i>	Telic	Atelic
Grammatical aspect	Perfective	Imperfective
Tense	Past	Present

Table 2.1. Two classes in children's early T&A morphology use (From Andersen et al., 1996: 460)

Therefore, the first occurrences of tense and aspect morphology are restricted to the aspectual nature of the predicate:

- Past morphology is initially restricted to telic verbs (accomplishments and achievements). Atelic predicates are firstly marked with present morphology.
- In languages with PF/IPF morphology, perfective past appears early, though restricted to telic verbs, while IPF past appears later and is initially restricted to durative and atelic verbs.
- In languages with PROG morphology, PROG appears firstly with activities, and is later extended to accomplishment and achievements, but it is never incorrectly overextended to statives.

[From Andersen & Shirai (1996: 31-32, Bloom et al., 1980)]

This biased pattern of production of T&A morphemes has been documented at very early ages –between 2 and 4 years– in spontaneous speech in many languages, such as English (Bronckart and Sinclair, 1973, Olsen and Weinberg, 1999), French (Antinucci and Miller, 1976), Italian (Weist et al., 1984), Polish (Li and Bowerman, 1998), Mandarin Chinese (Aksu-Koç, 1988), Turkish (Aksu-Koç, 1998, de Lemos, 1981), Brazilian Portuguese (Aarmon-Lotem, 1996), Hebrew (Aarmon-Lotem, 1998, 1987), Japanese (Rispoli, 1990, Shirai and Andersen, 1995, Shirai, 1998, Stephany, 1986), Greek (Almgrem, 1996), Basque and Spanish (Ezeizabarrena, 1996, Hernandez Pina, 1984), etc. Similar patterns of production have been found in Spanish (Gili Gaya, 1972, Hyams, 2007, Jackson-Maldonado and Maldonado, 2001, Jackson-Maldonado, 2012, Jacobsen, 1986).

Though these facts have been traditionally considered to be two different phenomena, new approaches to RI have found correlations between the skewed patterns of production of T&A morphology and the temporal interpretation of RI. Hyams(1999, 2012) finds very strong correlations between lexical aspect of the RIs

and their temporal reference: telic bare verbs in English appear in past-time contexts while atelic bare verbs occur in present-time contexts. In Russian, a language in which aspectual prefixes are separated from tense morphemes, which appear as suffixes, PF infinitives occur in past-time contexts while IPF infinitives occur in present-time contexts (Hyams, 2007). Thus, there is a parallelism between what happens in RI and what happens in children's first finite clauses: "in nonfinite clauses temporal reference is fully determined by event structure, while in finite clauses the value of tense is influenced, if not strictly determined, by the event structure" (Weist et al., 1997: 262). So, as Hyams (1998, 2012) suggests, non-finite root clauses are temporally anchored via the aspectual system. This also accounts for the fact that non-finite verbs are restricted to eventive predicates in Dutch, German, French and Russian's RI, in Greek's 'bare perfectives' and in Italian, French and German 'bare participles' but not in English RIs (Bloom et al., 1980, Hyams, 2007, Hyams, 2012).

### **2.2.2. The three levels of temporal-aspectual information in early child language**

In chapter 1, tense, grammatical aspect and predicational aspect were presented as three different categories that correspond to three different layers of temporal-aspectual information. The phenomenon of RI and the skewed distribution of T&A morphology observed in child language seem to suggest that the organization of the system in child language is not equivalent to the adult model: in child language the three different levels of temporal-aspectual information (lexical aspect, grammatical aspect and tense) seem to be more closely interconnected or even intermingled.

Children's pattern of production of T&A morphology in child language, led to the *Aspect-before-Tense Hypothesis* (Weist et al., 1984), also known as the *Defective Tense Hypothesis* (Andersen and Shirai, 1996) or the *Primacy of Aspect Hypothesis* (Antinucci and Miller, 1976). These names correspond to different formulations of the hypotheses differ in many respects. First, not all studies are equally explicit about which exact levels –predicational aspect, grammatical aspect or tense- are taken into account. The first studies on the acquisition of verbal morphology (Antinucci and

Miller, 1976, Bloom et al., 1980, Bronckart and Sinclair, 1973) were based on Romance languages and on English, languages in which verb morphology conflates tense and grammatical aspect on the same morpheme. Consequently, the initial *Aspect before Tense Hypothesis* (Andersen, 1989, Bloom et al., 1980, Bronckart and Sinclair, 1973) was imprecise about which specific level of tense-aspectual information is influenced by the aspectual class of the predicates: tense, grammatical aspect or both T&A.

Another source of difference across formulations of the different hypotheses comes from the role that different authors attribute to verbal morphology in child language (Bloom et al., 1980). Some formulations defend that T&A morphology in child language refers only to the aspectual properties of the predicate and not to temporality or (im)perfectivity:

“If the Aspect before Tense interpretation of the early use of morphemes is correct, so that the inflection is essentially redundant with the aspectual semantics of the verbs which the children learn, then it is necessary to consider the semantic organization of the verb system in child language, along with the semantics and syntax of the inflections themselves, in attempting to explain their acquisition.”

(Weist et al., 1984: 410)

Similarly, according to Weist et al.’s (1984) formulation of the hypothesis, in the first stages of the acquisition of verbal morphology T&A morphemes do not denote tense or aspect distinctions but are redundant to the lexical aspect of the predicate. This strong version of the hypothesis is labeled as the *Defective Tense Hypothesis* by Weist et al. (1989), or as the *Absolute Defective Tense Hypothesis* by (Bar-Shalom, 2002).

Arguments against this strong formulation of the hypothesis come from data on children's spontaneous and elicited production (Andersen and Shirai, 1996, Smith, 1980, Weist et al., 1984, a. o) showing cross-class combinations of T&A morphology different to the ones in Table 2.1 and child-directed speech and L2 adult studies (Bardovi-Harlig, 2000, Bloom and Harner, 1989, Cortés, 1989, Gagarina, 2008, Salaberry, 2000, Wulff et al., 2009) showing the same patterns of production in Table 2.1, but in adult data. This counterevidence created a great debate (see discussion in *Journal of Child Language* Andersen and Shirai, 1996, Bloom and Harner, 1989, Rispoli and Bloom, 1985, Smith and Weist, 1987, Weist et

al., 1984) between opponents of the strong version of the hypothesis (Weist and colleagues) and its supporters (Bloom and colleagues). The debate concluded with the formulation of a weak version of the hypothesis that “makes the observational descriptive claim about inherent-lexical-aspect and grammatical tense-aspect pairings and does not include the cognitive deficiency explanatory claim that Weist et al. argue so cogently against” (Andersen and Shirai, 1996: p. 537, Bloom and Harner, 1989). This position is defended by Bloom & Harner (1989), Andersen (1995) in the *Relative Defective Tense Hypothesis*; Shirai & Andersen (1996) in *The Aspect Hypothesis*; Andersen & Shirai (1998) in the *Primacy of Aspect Hypothesis (POA)*. Such weak hypothesis, although it is commonly accepted (Li and Shirai, 2000, Shirai and Andersen, 1995, Slabakova, 2002, a.o.), it is not explanatory but descriptive. It only states what the robust crosslinguistic generalization is, but it does not clarify the cause of such patterns of production: it does not explain what knowledge of T&A do children have, nor does it make any predictions about the errors that children may make when dealing with T&A. It consists of ‘a series of observations although they have been formulated to sound like predictions’ (Antinucci and Miller, 1976: 174).

### **2.2.3. Accounts for the biased patterns of tense and aspect combinations**

Different explanations have been given to explain the under-generalization pattern of production of T&A morphology in early child language. All these different explanations will be described briefly in this subsection. We follow Wagner (2011) in her classification of the different theories depending on whether they define deficits in children’s T&A system at the linguistic domain or at the cognitive domain, or if they take into account the similarities between adult and children production patterns and explain possible differences between adult’s and children’s performance based on information processing demands.

#### **2.2.3.1. Limited cognitive abilities**

First studies on the skewed patterns of production of T&A morphology (Bronckart and Sinclair, 1973, Piaget, 1969) were framed in Piaget’s (1991) work. They observed

that children's production of past morphology was dependent on the assessment of an observable result at the moment of speech. This observation was related to the idea that children do not have the capacity of temporal displacement: they can only refer to events verifiable at 'here' and 'now'. Therefore, this cognitive disability to refer to remote temporal referents was claimed to be responsible for the skewed patterns of production of T&A morphology in child language: children can only refer to past events if they can access the result of the event in the present moment and thus, they only talk about past telic events and not about atelic events because only telic events have an endpoint.

Another source of cognitive deficit comes from Weist and colleagues work (Weist et al., 1991, Weist et al., 1984, Weist et al., 1997) and their idea that the transition from experiential –egocentric– to inferential knowledge of time is correlated to the children's transition in linguistic knowledge from a mono-referential location system of space and time to a bi-referential one. This transition from a mono-referential to a bi-referential system is also claimed to happen in the spatial domain at the same age (4 years-old). In the case of time, a mono-referential system would deal with the speech time as the sole point of reference. The integration of a reference time, would lead to the transition to a bi-referential system of time. Thus, Weist and colleagues (1984, 1997) claim that 'the form of spatial and temporal representations puts a constraint on language acquisition such that children start with mono-referential distinctions. Linguistic interaction [...] influences further conceptual development, and consequently, the development of integrated representations and the expression of bi-referential locative relations'' (Bickerton, 1984: 115)<sup>22</sup>.

#### 2.2.3.2. Lack or underspecification of T&A categories

Other studies have argued that the skewed patterns of T&A morphology in child language reflect mis-mappings in child grammar and not children's limited cognitive

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<sup>22</sup> This theory does not directly explain the skewed patterns of production of T&A morphology. However, it does explain some comprehension data (Weist et al., 1991; Weist et al. 1997) that will be presented in sections 2.3.2 and 2.3.3.

abilities. Children lack certain grammatical categories or have them underspecified at the onset of the process of language acquisition.

Bickerton (1981, 1985) and Slobin (1984) proposed that children start to acquire T&A morphology with a predetermined set of semantic contrasts defining kinds of eventualities that trigger the mapping of the different temporal and aspectual meanings to verb morphology. These concepts “constitute the list of preferred settings that the child, in the absence of contrary evidence would assume to be appropriate that will permit its possessor to construct or compute all those rules, structures, and features of natural languages [...] given minimal exposure to such rules, structures, and features” (Slobin, 1985: 177). They provide “a level of organization that serves as an opening wedge to the acquisition of language-specific grammatical distinctions, without at first biasing them towards any particular language” (Bickerton, 1984: 1184). Bickerton’s (1981, 1985) *Language Bioprogram Hypothesis* claimed that the innate oppositions of process vs. state and punctual vs. non-punctual are essential for the process of first language acquisition (and for the course of development from pidgin to creole languages). On the other hand, Slobin’s (1987) *Basic Child Grammar Hypothesis* stated that the semantic contrast that is relevant for the acquisition of verbal morphology is the opposition between process and result<sup>23</sup>.

On the other hand, under a constructivist point of view, Bertinetto (1990) proposed that learners are provided with an intuitive understanding of a set of semantic distinctions: state vs. process; complete vs. incomplete, now vs. not-now and realis vs. irrealis. These dimensions are inextricably mixed up with syncretic proto-concepts, such as the ones in (1):

- (1) a. state: incomplete-event: now: realis
- b. process: complete-event: not-now: irrealis

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<sup>23</sup> Slobin’s distinction of process vs. result seems more consistent with child data (Stephany, 1981, Shirai 1991, Shirai & Andersen, 1995; Li & Bowerman, 1998). Different studies have tested which of these contrasts is relevant. Although the opposition between state and processes is reliable, given that children do not overgeneralize progressive marking to stative verbs (Bickerton, 1981, for English; Cziko & Koda, 1987, for Japanese), the distinction between punctual and non-punctual does not hold for some languages like Japanese (Cziko & Koda, 1987) or Chinese (Li & Bowerman, 1998), contrary to the predictions of the *Language Bioprogram Hypothesis*.

To achieve adult linguistic competence children have to disentangle these entwined categories and, through intermediate steps, link them to the proper morphological marker on the basis of the available input. Depending on the target language, the learner may extricate one of the categories and relate it to the morphological marker, the others remaining as a syncretic residue. The sources of information for doing so are the lexical and morphological forms provided by the target language, conventionalized pragmatic inferences and some compensating lexical tools like adverbial expressions. Crucially, under this view, the crosslinguistic differences in the linguistic encoding of T&A influence the acquisition of tense and aspect morphology. For example, when acquiring grammatical aspect prominent languages such as Slavic languages, which typically mark overtly the PF/IPF distinction obligatorily in all predicates, the prominence of grammatical aspect may support the disentangling of this category out of the syncretic proto-category. Similarly, Sebastián (1984) claims that the fact that Spanish has a very rich verb inflectional patterns make children more sensitive to the distinctions within verbal morphology and, therefore, they tend to express tense and aspect contrasts using verbal morphology form very early on.

The theories that propose that the pattern of children's early productions of T&A morphology are due to differences between adults' and children's cognitive (section 2.2.3.1) or linguistic system (Section 2.2.3.2) have to face a series of empirical problems.

First, as explained in the previous section, the skewed patterns of production of T&A morphemes are a tendency, not a categorical phenomenon: cross-class combinations of T&A morphology different from the ones in Table 2.1 are produced by children at early stages, though they are less frequent, as shown by Weist et al. (1980) for Polish with two kinds of data: longitudinal data of spontaneous speech and cross-sectional data of inducted speech of very young children (1;7-2;2). More data of spontaneous speech contradicting the trend of the combinations of T&A markers and telicity –telic verbs with imperfective



morphology, atelic predicates with past morphology, etc- were found by Smith (1988), Aksu-Koç (2002), Bar-Shalom (2007), a.o. These cross-class combinations of T&A morphology could be analyze as instances of the process of shifting from one cognitive or grammatical system to another.

Second, comprehension studies of T&A morphology have shown that children can comprehend the meaning of these forms even when they are combined with predicates of the opposite class (Aksu-Koç, 1998, Valian, 2006, Wagner, 2001, Weist et al., 1991, Weist et al., 1999, Weist et al., 1997, a. o). These data cannot be explained if children's cognitive abilities are not fully developed, nor if children's grammar is not adult-like.

Furthermore and more importantly, these patterns are also found in adult corpora and in child-directed speech (Gagarina, 2008, Lehmann, 1993, Salaberry, 2000, Shirai and Andersen, 1995, Stephany, 1986, Wulff et al., 2009, a. o). Adults use more frequently perfective morphology with telic verbs, imperfective and present morphology with atelic verbs and progressives with activity verbs, and they almost never use progressive morphology with states<sup>24</sup>. In addition to this, associations between lexical aspect and verbal morphology are also observed in studies of adult second language acquisition of T&A morphemes in various languages (Bardovi-Harlig, 2000, Bybee, 1985, a.o.). Therefore, the tendency to produce morphological aspect according to the lexical aspect of the predicate is not an exclusive characteristic of child speech. This seems to suggest that “there is something natural about the classes defined by the vertical columns” in Table 2.1 (Bybee, 1985: 462). Such a bias in the input was previously observed in the typological literature like Comrie (1976) or Bybee (2012).

In fact, there are reasons to claim that the tense, grammatical aspect and predicational aspect combinations in Table 2.1 form natural classes. On the one hand, the present and the imperfective past denote open and incomplete moments,

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<sup>24</sup> It has been pointed out that child-directed speech has a more restricted distribution as compared to adult to adult-directed speech (Andersen & Shirai, 1996)

similar to atelic verbs, and therefore they are aligned with unboundedness. On the other hand, the meaning of completion, which is natural to telic verbs, can only be implemented by past perfective morphology (Rosch, 1975). Assuming that the class combinations in Table 2.1 are common to children and adults, there are different explanations for the naturalness and easiness of these combinations and the possible differences between adults and children for dealing with these categories.

### 2.2.3.3. Prototype theory

The *Prototype Theory* (Li and Shirai, 2000), a cognitive theory of categorization, assumes that the membership in a category is graded in a way that there is a best exemplar -the prototype-, and peripheral members which share some of the characteristics of the prototype. Prototypes are easier to acquire than peripheral members. Applying this model of category learning to the acquisition of T&A, supporters of the prototype account (Andersen and Shirai, 1996, Shirai and Andersen, 1995, Shirai, 1994, a. o) claim that children (and adult second language learners) start the acquisition of the T&A markers with the prototype of the category and then these markers are extended to less prototypical cases. There are two variants for explaining how learners create a prototype. One of the approaches (Bybee and Dahl, 1989, Dahl, 1985, Taylor, 1989) provides a universal scale of markedness -from less marked or prototype to more marked-, based on crosslinguistic theoretical analyses of T&A and on grammaticalization data (Andersen and Shirai, 1996).

(2) Prototypes and universal scales of markedness for past tense and progressive marking:

Deictic past → (achievement → accomplishment → activity → state → habitual or iterative past) → counterfactual or pragmatic softener.

Process (activity → accomplishment) → iterative → habitual or futurate → stative progressive

[From Andersen & Shirai, (2000: 31-32)]

Thus, following these prototypes, past tense is first used to refer to deictic past events and then is extended to the other uses. Similarly, progressive marking is first

used with processes and later extended to other uses. These prototypes roughly correspond to the categories in Table 2.1.

This definition of prototypes seems to suggest that prototypes are universal. However, prototypes have also been claimed to be construed on the basis of the input: Li & Shirai (1998) affirm that the prototypes are not innate or universal, but created as a result of distributional analyses. Prototypes are the most frequent combinations in the input. Therefore, constructivist approaches account for the skewed distribution of T&A morphemes in child and adult language by claiming that the aspectual bias in children's production is derived from the aspectual bias in adults' discourse and conforms to the prototypes of the categories. Even though it is true that frequency very important for language acquisition, the prototype theory does not offer an explanation to the adult pattern other than providing the circular argument that the combinations in Table 2.1 are more frequent in adult speech because they are the prototypes in their categories and they are the prototype because they are the most frequent combinations.

#### 2.2.3.4. The Subset Principle

Olsen and colleagues' (Berwick, 1985, Olsen and Weinberg, 1999) also interpret the skewed patterns of production of T&A morphology as the reflection of a learning strategy: the application of the Subset Principle (Smith, 1991) to the acquisition of T&A. The Subset Principle states that children first opt for the most restrictive possibility among the different options that natural languages provide, because that is the only possibility that can be falsified using the positive evidence of the sentences that the child encounters in her linguistic environment<sup>25</sup>. Applied to T&A, the Subset Principle departs from the observation that in languages without tense morphology IPF and atelic predicates tend to be interpreted as present while PF and telic predicates tend to be interpreted as past -e.g., Mandarin Chinese, (Smith, 1991)- and that in some languages T&A morphology is restricted to certain kinds of verbs in ways that confirm the vertical classes in Table 2.1, as, for example, in Mandarin

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<sup>25</sup> The Subset Principle is founded on the following standard assumptions of generative theory: the lack of negative evidence (ungrammatical productions in adult data), the universality of the principles of grammar and the continuity between adult and children's linguistic systems.

Chinese, where the grammatical IPF marker *zui* cannot be combined with accomplishment predicates (Lee, 1995), or in Korean, where resultative aspect auxiliary *-e isssta* can only occur with telic intransitive verbs (cf. Lee, 1995, Olsen et al., 1998, Wagner, 2001). These facts suggest that the mappings of IPF onto dynamic, durative predicates and PF to telic predicates are the most restrictive options found in natural language. Therefore, these combinations are also the initial setting of T&A morphology in the acquisition process. Other combinations are further acquired based on positive input.

#### 2.2.3.5. Failures in form-to-function mappings

Another difficulty that children may encounter, even if they are able to distinguish among tense, grammatical aspect and predicational aspect, is to establish the right mapping and identifying which concept a given morpheme refers to. For example, Wagner (van Hout, 2008, 2001) claims that children may have mis-mapped aspect information into tense morphology or they may have difficulties teasing apart concepts like past and completion. On the other hand, children may have problems to find the right morphosyntax because the form in the language are not simple, transparent or salient enough (van Hout et al., 2010a, Wagner, 2012, Weist et al., 1991, Weist et al., 1997).

#### 2.2.3.1. Informative processing load

Another approach to explain the easiness and naturalness of the classes in Table 2.1 is “the informative processing point of view” (Wagner, 2012) that maintains that the use of T&A morphology requires the language user “to coordinate a range of information –from the morphosyntactic forms, to the specific semantic interactions, to the evaluation of the conditions with respect to the world. The relative difficulty in processing any of these information elements can influence how hard it is for children to produce (or understand) a particular tense-aspect combination” (Slabakova, 2002: 465) even if children are able to distinguish among tense, grammatical aspect and predicational aspect. There are different factors that have been pointed out as creating a greater computational load in the processing of T&A

marking: the semantic complexity of the different combinations, the difficulty of certain form-to-meaning mappings and difficulties in the integration of the information provided by T&A morphology in the discourse.

#### 2.2.3.1.1. SEMANTIC COMPLEXITY

Slavakova (2005) and van Hout (1998, 2007a, 2008) proposed that T&A combinations in Table 2.1 are semantically simpler than cross-class combinations. Their analysis of the data departs from de Swart's (1999) DRT account of aspectual tenses. In this account, de Swart argues that the role of grammatical aspect morphemes is to shift the eventuality description (the predicational aspect) into a predicate of some other type. For example, IPF and PROG morphology map predicates (telic or atelic) onto predicates of the homogeneous (atelic) kind. Additionally, tenses can be sensitive to the kind of predicates they require as input. When the aspectual requirements of the operators are not satisfied, covert coercion operators are introduced to change the aspectual kind of the predicate into a predicate that satisfies the aspectual requirement of the tense operator, as in the case of PF past (e.g. French *Passé Composé*). The change of value of the basic predicate is costly to process as it has been shown by processing studies (Hopper and Thompson, 1980). The processing cost of aspect shift and aspect coercion may be responsible for the low frequency of cross-class combinations in adult corpora, given that, also adults are constrained by economy conditions. The processing cost of aspect shift may hinder the acquisition of these cross-class combinations, given that children are claimed to have a more limited working memory.

#### 2.2.3.1.2. LIMITED PRAGMATIC ABILITIES

Finally, T&A morphology interacts with the discourse in several ways. For example, the PF (bounded) versus IPF (unbounded) distinction seems to be the natural outcome of the organization of narrative discourse in terms of foreground and background information (Amlgren, 1996, Dowty, 1986). The status of foreground vs. background information mainly holds in narrative discourse, but it does not necessarily do so in some other kinds of discourse. Children vary their use of T&A

forms depending on the kind of discourse they hear as shown by Amlgren (1976); Antinucci & Miller (1976) and Gili Gaya (1972). It may be the case that, although children can distinguish between the three levels of temporal information –tense, grammatical aspect and predicational aspect–, the implications of the use of certain forms in certain kinds of discourse are not properly mastered by children, as it has been suggested by van Hout (1976, 2007a) for the interpretation of IPF in narratives.

As a summary, different explanations have been proposed to account for the interconnection of the three levels of temporal and aspectual information in child language. Some theories claim that children's pattern of production responds to their limited cognitive abilities (Bickerton, 1981, Bronckart and Sinclair, 1973, Weist et al., 1991, Weist et al., 1984, Weist et al., 1997) or to the lack or underspecification of some of these categories (Bertinetto, 2009, Bickerton, 1984, 1985) or the lack of separation of the three temporal levels of information in children's grammar (Bar-Shalom, 2002). However, these lines of explanation have to face empirical problems, such as the fact that cross-class combinations of T&A morphology are attested in children's speech (Kazanina and Philips, 2007, Smith, 1980, Weist et al., 1984, a. o); the fact that comprehension studies on T&A morphology have shown that children can comprehend the meaning of these forms even when they are combined with predicates of the opposite class (Aksu-Koç, 1998, Valian, 2006, Wagner, 2001, Weist et al., 1991, Weist et al., 1984, Weist et al., 1999, a. o); and the fact that the tendency to produce morphological aspect according to the lexical aspect of the predicate is not an exclusive characteristic of child speech but it also appears in adult speech (Andersen and Shirai, 1996, Gagarina, 2008, Lehmann, 1993, Olsen et al., 1998, Shirai and Andersen, 1995, Wulff et al., 2009, a. o). Therefore, different theories have been posited to explain the acquisition of T&A morphology and the possible differences between adults and children. First, two learning principles have been proposed to account for the acquisition of T&A morphology: the Subset Principle, from the generative tradition (Li and Shirai, 2000, Olsen and Weinberg, 1999), and the Prototype Theory for input driven analyses (Wagner, 2012). On the one hand, it

has been claimed that children may encounter difficulties when acquiring T&A morphology because they imply the coordination of different kinds of information (Slabakova, 2002, Wagner, 2012). Children may have difficulties integrating information of different sources: the specific semantic interactions between lexical and grammatical aspect (van Hout, 2005, 2007a, 2008) the form-to-meaning mapping (van Hout, 2007a, 2008, Wagner, 2010a, , Weist et al., 1991, Weist et al., 1997) or the integration of the forms in the discourse (Nelson, 1991).

Production data on tense-aspect acquisition is limited in several ways. First, production data are not truly reliable because the use of certain forms does not guarantee that children are using them to convey the same meanings as adults do; conversely, children may be using some T&A morphemes with different or approximate meanings, as noted by Nelson (1998). Moreover, predicational aspect distinctions are built up compositionally by the verb meaning, the direct object and some other PPs or particles. But, as Wagner (1998) points out, in the first stages children produce incomplete sentences. Researchers use contextual clues to figure out what children intended to say in order to classify predicates in the different classes but this is an “inherently unreliable method” (Slabakova, 2002: 109). In addition, children may also be using fewer forms than what they actually understand: they might not have encountered a context in which they have to produce an unexpected or non-prototypical combination. Moreover, the use of aspectual markers is dependent on speaker choice, and thus, it is not easy to document errors in children’s production of these morphemes, because differences between adults and children might have been interpreted in many cases as different aspectual choices.

Thus, comprehension data and experimentally and controlled elicited production data are also needed to deepen on the study of children’s acquisition of T&A morphology. In fact, although most of the analyses presented in this section are based on production, proposals on the informative costs (Antinucci and Miller, 1976, van Hout, 2005, 2007a, 2007b, Wagner, 2001, Wagner, 2012, Weist et al., 1991, Weist et al., 1997) also take into account comprehension data. In the next sections we will briefly expose the main findings on children’s comprehension and

elicited production of tense, grammatical aspect and predicational aspect separately, to try to attest what knowledge children have about these different layers of temporal information in language.

### **2.3. EXPERIMENTAL DATA: COMPREHENSION AND ELICITED PRODUCTION**

#### **2.3.1. Predicational aspect**

The observations about children's patterns of production of T&A morphemes presuppose an adult-like knowledge of predicational aspect: if children restrict the use of PF and past morphology to telic predicates and PF and present morphology to atelic children can distinguish between telic and atelic predicates. Additionally, elicited production studies have shown that children are aware of the punctual vs. non-punctual distinction –they tend to use past forms more often for predicates of shorter duration (Bloom et al., 1980, Bronckart and Sinclair, 1973)– and that children can also distinguish between state and activity verbs –they do not over-extend the progressive form to stative verbs, at least in English (Wagner, 2006)–. However, the fact that children use T&A morphology distinctively with the different predicational classes proves that they can distinguish among predicational classes, but it does not prove that they have mastered all the subtle semantic information of the different classes and their linguistic reflexes.

Predicational aspect distinctions are derived compositionally by the characteristics of the different components of the predicates: the lexical meaning of the verb, the quantization of the object and the optional addition of telicity particles and resultative PrepPs. Most of the studies dealing with acquisition of predicational aspect try to discover how children learn to integrate all these pieces into the compositional notions of predicational aspect and, more specifically, of telicity.

Transitivity has been proposed to be a clue for children to identify which verbs form telic predicates and which verbs do not. The structural bootstrapping function of telicity was confirmed by Wagner (1998) in an event-counting task designed to test whether children applied different criteria to individuate events depending on telicity. For atelic predicates, the target counting criterion was spatiotemporal –how



many times the action continued after interruptions— while for telic predicates the target counting criterion was goal oriented –how many times the action reached completion. The results showed that by age 3 children can reliably distinguish telic vs. atelic. However, children at age 2 use transitivity as a structural clue to telicity, incorrectly applying the goal-oriented criterion to atelic transitive predicates.

The other clue that children use for attesting telicity is the presence of telicity particles. In Germanic languages, particles such as *up* (in English) or *op* (in Dutch) mark the telicity of the predicate. In a comprehension study using a truth-value judgement task with pictures Van Hout (2001, 2007a), investigated if compositional telicity (cases where the telicity of the predicate is dependent on the morphosyntax of the object) is more difficult to interpret than predicational telicity (derived from particles) in Dutch and English. She presented two different situations to children: a situation where an event reached completion (the so-called *telic event*) -e.g. a mouse eats the whole cheese- and a situation where some action was performed but without completion (the so-called *atelic event*) -e.g. a mouse eats a little bit of cheese but leaves lying next to him on the floor-. Her results show that children (3-5 year-olds) interpreted particle verbs as telic, but they accepted both readings (telic and atelic) for intransitives, atelic transitives with a bare noun object, and telic transitives with a quantized object, showing that it is easier to learn predicate telicity than compositional telicity. This preference for predicational telicity is not confirmed by the analysis of Spanish telicity marker *se* (Wagner, 2006). In Hodgson's study, reflexive and telic uses of *se* were contrasted with sentences without the telicity marker *se*. Three situations were compared: completed events with one participant, completed events with more than one participant and incomplete events. Adults, 9-11 year-olds and 7-8 year-olds children performed differently for sentences that included the marker *se* and sentences without *se*, but 4-6 year-olds could not distinguish between these two sentences interpreting both as telic.

Thus, the skewed pattern of production of T&A forms indicates that children are able to make subtle predicational aspect distinctions before age 3. Furthermore, comprehension studies have shown that children are sensitive to the compositional

nature of predicational aspect relying on transitivity (van Hout, 1998) and the presence of telicity particles (van Hout, 2007a, 2006) as clues to determine the telicity of the predicates. However, overreliance on transitivity and the presence of telicity particles leads children to provide the wrong telicity value to some predicates, over-extending telicity to all transitive verbs (Hodgson, 2003) at age two, and mis-interpreting telic predicates without particles as atelic at ages 3 to 6 (2003, but not Hodgson 2003, Li and Bowerman, 1998, van Hout, 2007a).

### 2.3.2. Grammatical aspect

Children's spontaneous production data in section 2.2.1 show that grammatical aspect morphemes are produced relatively early, but they tend to be under-extended to certain kinds of predicates. This fact generated a debate on whether these forms were providing grammatical aspect meaning or whether they were misinterpreted as either predicational aspect or tense markers. Comprehension studies on grammatical aspect morphemes aimed to find out if children were able to distinguish grammatical aspect from predicational aspect and from tense.

On the one hand, some studies have shown that there is a certain dependence of predicational aspect in the comprehension of grammatical aspect. For example, Li & Bowerman (2001) showed that, in a sentence-to-picture matching task, Chinese children's (ages 4 to 6) comprehension of progressive *zài* with activities and semelfactive verbs is understood adult-like, while the perfective particle *le* is understood more frequently target-like with achievement verbs.

However, elicited production studies, in contrast to spontaneous production data, reported that children as young as three tend to over-produce cross-class combinations of past IPF morphology with telic verbs. Children up to 6 year-old tend to describe complete versions of events with IPF telic predicates, unlike adults, who tend to produce only PF (Hodgson, 2003); for Spanish: (Weist et al., 1991). This combination of telic predicates with IPF aspect in elicited production suggests that children can treat grammatical aspect and predicational aspect compositionally. More evidence comes from other studies on the comprehension of grammatical

aspect which operate with the properties of the *Imperfective Paradox*. According to the *Imperfective Paradox*, telic predicates combined with PF aspect entail completion and consequently they refer to complete events, whereas telic predicates combined with IPF morphology can be related to complete and incomplete events because IPF morphology cancels the completion entailment of the telic predicate. Thus, the Imperfective Paradox constitutes an ideal linguistic context to disentangle predicational aspect from grammatical aspect by testing whether children are able to distinguish PF and IPF telic predicates in terms of completion. Studies on the comprehension of grammatical aspect have shown that children distinguish perfective and imperfective aspect from really early on. Weist et al. (2001, 1997) showed that English and Polish children can correctly link PF and IPF forms to complete and ongoing situations respectively. Similar results were found for Russian by Vinnitskaya and Wexler (2007), who reported that in a sentence-to-picture matching task 3 and 6 year-old children matched the PF with completed events and the IPF to situations in progress. Kazanina & Philips (2005) also found similar results for 3-6 year-old Russian speaking children in a sentence-to-scene matching task and on a truth-value judgement task. More evidence that children can distinguish perfective from imperfective morphology comes from van Hout (2005, 2007a, 2008) and Hollebrandse, van Hout & Vet (2003) who showed that in a picture selection task children 3, 4 and 5 year-old children behaved differently with perfective and imperfective marking in Polish and Dutch, showing that they were aware of this aspectual contrast.

However, performance with PF and IPF aspect is not always adult-like. Hodgson (2007) has reported that 3-5 year-old children fail to match PF to complete events. She claims that the presence of the object plays an important role in factoring out the entailment of completion and children's inability to generate completion entailments of the PF in her study was due to the fact that children could not assess the change of state of the object in the pictures. Additionally, children's comprehension results for the IPF are controversial. On the one hand, studies on Slavic languages (Hodgson, 2003, Vinnitskaya and Wexler, 2001- exp.3 and 4 -) concluded that children below 3 comprehend grammatical aspect adult-like. In

contrast, differences between adults and children have been reported by Hodgson (2005), van Hout (2008, 2002) and Wagner (2005, 2009), who found that even five year-old children tend to link IPF marking to complete events in Spanish, Italian, Dutch, Polish and English. Different factors have been proposed to explain why children encounter more difficulties to interpret telic IPF predicates and why they link them to completion. It must be noticed that telic IPF predicates are a cross-class combination with respect to Table 2.1: a bounded predicational aspect –telicity– and an unbounded grammatical aspect –imperfectivity. Therefore, any of the explanations of the skewed pattern of production in section 2.2.3 could also explain this comprehension data.

For example, with respect to semantic complexity, IPF telic predicates are claimed to be more difficult than PF because IPF morphology changes or coerces the telic predicate into an atelic predicate, while PF morphology maintains the basic eventuality of the predicate. This aspect shift or coercion is alleged to be costly (van Hout, 2007a, 2008, 1998).

With respect to form-to-function mappings, there is a difference in the comprehension of adverbs, verbal morphology and structural grammatical aspect distinctions made by the object case. Although adverbials seem to help in the comprehension of grammatical aspect meaning, as shown by Wagner (2002), children can also rely only on morpho-syntactic information to assess aspectual meanings when adverbial clues are not provided. Even so, not all morphosyntactic configurations are equally easy to interpret. In the Finnish grammatical aspect system PF and IPF distinctions are dependent on the case of the object but (im)perfectivity can also be conveyed by the use of periphrastic forms –progressive and perfect–. While the aspectual case system is not mastered by 6;6<sup>26</sup>, the use of periphrastic forms is mastered much earlier (van Hout, 2008, Weist et al., 1991). Additionally, there are crosslinguistic differences in the comprehension of

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<sup>26</sup> Wagner (2002) analyzes these facts as derive from the requirement to focus on the direct object's completion to value Finnish grammatical aspect.

grammatical aspect morphology and these differences are related to the various degrees of grammaticalization, markedness and saliency of the forms in the languages (van Hout, 2007b, van Hout, 2008, van Hout et al., 2010a).

Finally, with respect to pragmatic complexity, van Hout (2007b) relates children's non target-like tendency to associate telic IPF to completion to the fact that in her experiment the PF vs. IPF forms were uttered in a narrative context. She claims that children could not perform correctly the anaphoric linking of the IPF to the relevant time in the discourse. This interpretation of the deficits with imperfective telic predicates is connected to Kazanina & Philips' (2003) experiments. Kazanina & Philips study shows that children perform adult-like with the imperfective when they are given an explicit referent time interval to validate the anaphoricity of the imperfective. In the absence of such a clue, some of the children did not perform adult-like. The pragmatic complexity hypothesis can also account for elicited production data and children's tendency to describe complete events with both PF and IPF telic predicates. The over-use of IPF telic predicates to describe complete events could be due to the fact that in narratives IPFs are used to describe past events as background information without taking into account if completion took place (Vinnitskaya and Wexler, 2001), or to problems in distinguishing which information is presupposed and what is new information (Wagner, 2002), given that in adult language IPF can be used to describe completed events when completion is presupposed, but not when it is new information for the hearer. In addition to the hypotheses in

In addition to the different explanations section 2.2.3, Wagner (2005) proposed that the difficulties for interpreting IPF until approximately age 5 in her experiment were due to the absence of agency clues. In her experiment, the pictures portraying the complete or incomplete situation only presented the complete or incomplete object as to represent the final outcome of the situation and children could not perform the task given only object-oriented information.

As a summary, comprehension studies have shown that children can handle the basic distinctions made by aspect morphemes. However, although telic IPF are

over-produced in elicited production studies, non-prototypical combinations seem more difficult to understand, specially the cancellation of the completion entailment of telic predicates with IPF morphology. This difficulty has been related to several factors such as the processing costs of aspect shift and coercion (van Hout, 2007a, 2008, 1991), the relative complexity of the morphosyntactic configuration (Wagner, 2002), the absence of agency clues (Kazanina and Philips, 2007), the anaphoricity of IPF (Hodgson, 2003, van Hout, 2008) and its function as background information in discourse (Vinnitskaya and Wexler, 2001, Weist et al., 1991)

### 2.3.3. Tense

The production studies in section 2.2.1 have shown that in the early stages tense morphology is defective in two ways: first, in some languages, children go through a period during which they do not produce T&A (and agreement) morphology with the verb; additionally, when children start producing tense morphology, they restrict to certain kinds of predicates. These facts have been explained by the assumption that children do not have the property of temporal displacement, they cannot refer to remote moments not related to the here-and-now (Piaget, 1969).

However, comprehension studies on tense showed that children understand tense morphology and they can, therefore, establish tense distinctions. Weist et al. (Valian, 2006, 1991) provided evidence of Polish and English children who could distinguish past vs. future at 2;6. Wagner (1998, 2000) showed that 3 year-old children acquiring English can differentiate past, present and future morphology and correctly link them to past, present and future situations, although they cannot rely only on morphology but they need the reinforcement of temporal adverbs until age 4. Valian (2009) shows that 2-year-olds' performance is adult-like when tense is marked in contrasting auxiliaries or in the copula. Thus, children can comprehend the basic tense distinctions by 3 or even earlier<sup>27</sup>.

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<sup>27</sup>Wagner et al. (2009) tested the comprehension of present ongoing vs. simple past with an intermodal preferential looking paradigm and show that 30 month children can correctly link the simple past to completed events and the present progressive marker to ongoing events with novel and familiar verbs. However, these results are not conclusive for the comprehension of tense, because in this experiment grammatical aspect and tense are conflated in the same condition.

However, grammatical aspect information interacts with the comprehension of tense morphemes: when completion information is added by grammatical aspect, children's performance improves and success is attested even at age 2; when no completion information is provided –when children are asked to distinguish between present and past progressive (*is -ing* vs. *was -ing*) – children do not succeed until age 4 (Wagner, 1998, Wagner, 2001). These findings suggest that grammatical aspect can interfere in the understanding of tense.

Moreover, children's comprehension of tense contrasts is also dependent on the kind of forms conveying this meaning. Wagner (2001) showed that children's performance was adult-like when the inflected forms were accompanied with temporal adverbs. In Wagner (1991) adverbs *before, now and later* were used in the control conditions and. However, the status of adverbials as facilitators of the task is challenged by Weist et al. (1991, Weist et al., 1997) and Weist et al. (1991). In their experiment they tested if there is a difference in understanding of aspect with immediate (*yesterday, just and in a second*) vs. remote adverbials (*last winter, three days ago and in an hour*), and their results showed that, overall, the performance with adverbials was less target than without adverbials. There is a difference between Weist et al.'s adverbials and Wagner's adverbials: while Wagner used deictic adverbs whose meaning is transparent and purely relational and whose temporal location is directly relational to the moment of speech (*before, now, later*), the time adverbials used by Weist et al. (1991, Weist et al., 1997) and Weist et al. (1991) have also a lexical meaning, which is dependent on the calendar (like in the case of *yesterday* or *last winter*) or some other world knowledge notions (*second, hour, winter, day...*) that might be not accessible to children.

All the same, the kind of morphological form that conveys tense meaning does seem to be a factor for development: Weist et al. (1991) showed that there are cross-linguistic differences in the acquisition of tense morphology: while English and Polish speaking children can handle the basic tense distinctions at the age of 2;6 Finnish children master their tense distinctions later. Moreover, Weist et al. (Hollebrandse et al., 2010, 1991) showed that Finnish children have more difficulties

to distinguish tense contrasts with simple forms (past vs. future) than with periphrastic forms (present perfect vs. prospective periphrases). Furthermore, Hollebrandse et al.(1995) showed that there are crosslinguistic differences in the comprehension of tense morphemes depending on the informativeness of the different forms, their specificity and their degree of polysemy.

To sum up, comprehension studies showed that tense inflection conveys tense meaning from age 3. The assessment of tense meanings does not seem to be influenced by predicational aspect, but it is reinforced by completion information provided by grammatical aspect and it is also influenced by the nature of the form conveying tense meaning or its morphological configuration.

#### **2.4. SUMMARY AND CONCLUSION**

The studies on the acquisition of T&A were aimed to check if in the early stages of language development children have the same conceptual and semantic temporal system than adults, if they generate the same form to meaning mappings than the one established in their language and if they do not, to discover what causes such deficits and mis-mappings and what triggers the transition to the adult system.

The first studies on spontaneous production showed that (i) in some languages children start producing forms without tense morphology and the temporal meaning these forms convey depends on the kind of predicate – past for telic predicates and present for atelics- and (ii) crosslinguistically, first instances of tense and aspect morphology usually concur with certain kind of predicates: past and perfective with telic, and present and imperfective with atelic predicates. This fact has been considered in some studies as evidence that children's organization of the temporal system is not adult-like, because they do not distinguish the three levels of temporal and aspectual information: predicational aspect, grammatical aspect and tense.

However, the fact that these patterns were also found in child-directed speech, adult-to-adult speech and L2 learning casts some doubts on the characterization of



tense and aspect systems in child language as different with respect to adult language. Moreover, experiments on the comprehension of tense, grammatical aspect and lexical aspect showed that children can understand the basic distinctions of each of predicational aspect, grammatical aspect and tenses independently. Nonetheless, comprehension studies have identified some factors that may be interfering in the full comprehension of these categories.

First, studies on the comprehension of grammatical aspect have shown that IPF telic predicates are more difficult to understand than PF telic predicates. This difference has been attributed to the anaphoricity of IPF or to the semantic complexity of this combination, due to the fact that it involves aspect shift or coercion, or to the dependency of agency clues in the interpretation of IPF. The experiment presented in chapter 4 of this thesis is aimed to test which of these options is more appropriate to explain children's comprehension data.

In addition to this, studies on the comprehension of predicational aspect have also shown that some semantic configurations are more opaque than others for assessing telicity. In fact, when telicity is dependent on the object, it seems more difficult to compute than when it depends on particles. However, studies on the comprehension of grammatical aspect and tense have taken for granted the mastery of the predicational aspect system. The experiment presented in chapter 5 of this thesis tries to fill this gap, by paying attention to the role of more fine grained predicational aspect distinctions in the comprehension of grammatical aspect.

Furthermore, previous studies have detected crosslinguistic differences in the acquisition of tense and aspect morphemes. These divergences are related to the typological differences in the morphosyntactic configuration of tense and aspect or in other characteristics of the systems, such as markedness, grammaticalization, and salience. The experiments presented in chapter 3 (tense), 4 and chapter 5 (grammatical aspect) of this dissertation are aimed to discover whether this factors are determining the acquisition of various forms within a language, Spanish, by contrasting the comprehension of synthetic and periphrastic forms.

Finally, different kinds of experiments have been carried out in the literature to test the comprehension and production of T&A morphemes. Differences in the methods could be influencing the results. Chapter 7 of this dissertation will contrast the results and implications of the different methods to test the acquisition of T&A morphology.

# **CHAPTER 3**

## **CHILDREN'S COMPREHENSION AND PRODUCTION OF TENSE IN SPANISH**

### **3.1. INTRODUCTION**

Children start producing tense morphemes form around age 2, but these first uses seem to be dependent on completion information of the situation and on the kind of predicate used (Antinucci and Miller, 1976, Bronckart and Sinclair, 1973, Valian, 2006, a. o). Moreover, comprehension studies have shown that past, present and future tense morphemes are distinguished by children as young as two (Hollebrandse et al., 2010, Wagner, 2001, Wagner et al., 2009, Weist et al., 1991). However, the evidence is not conclusive, since some of the forms used contrast not only in tense but also in aspectual meaning and, consequently, children may have resolved the tense task via aspect instead of tense. Additionally, crosslinguistic differences have been found in the comprehension of tense markings (Klein, 2008). These have been attributed to the ambiguity of the forms and their degree of informativeness. In this chapter, we investigate Spanish five-year-olds' comprehension and production of the tense forms in an experiment in which aspect is maintained neutral and there is no reinforcement of completion information whatsoever. Additionally, two different kinds of forms are studied, synthetic and periphrastic forms, in order to see whether differences in tense markings affect children's comprehension and use of the different tense forms.

This chapter is organized as follows: section 3.2 introduces the Spanish tense-aspect forms that are going to be considered in the experiment (for a full description of the Spanish tense-aspect inflectional system, see chapter 1, section 1.3.4); section 3.3

presents the main findings in the literature on the acquisition of tense; the aims of the study are presented in section 3.4; the design and methods of the experiment are described in section 3.5; the results are presented in section 3.6 and discussed in section 3.7; final conclusions are presented in section 3.8.

### **3.2. TENSE-ASPECT MORPHOLOGY IN SPANISH**

According to the literature (Comrie, 1976, Demirdache and Uribe-Etxebarria, 2000, 2005, 1990, Reichembach, 1947, a. o), tense is a grammatical category that establishes the deictic location of the time of the event with respect to some other relevant time in the discourse, which normally is the moment of speech, though it can be some other moment in time salient in the discourse. Tense can be conveyed by lexical elements such as adverbial or nominal phrases denoting time periods or by functional elements such as particles and bound morphemes. Languages vary on the relative weight assigned to the lexicon and to the grammar for the tense function. Languages also vary in the array of grammatical forms that express tense meanings and on the semantic value of such forms.

Spanish is a language with a very rich system of tense-aspect verb inflections (see chapter1, section 1.3.4). The Spanish verbal paradigm contains several forms to express past, present and future meanings. In this study, we will focus on the comprehension of past, present and future imperfective and neutral forms, both synthetic and periphrastic:

LABEL	EXAMPLE	TIME REFERENCE	TEMPORAL-ASPECTUAL MEANING	MORPHOLOGICAL COMPLEXITY
Pretérito imperfecto	<i>cantaba</i>	Past	Progressive Habitual Continuous Dislocated use: irrealis	Synthetic
Progresivo pasado	<i>estaba cantando</i>	Past	Progressive	Periphrastic
Presente simple	<i>canta</i>	Present	Progressive Habitual Continuous Near future	Synthetic
Progresivo presente	<i>está cantando</i>	Present	Progressive	Periphrastic
Futuro simple	<i>cantará</i>	Future	Progressive Inchoative Terminative Dislocated use: epistemic	Synthetic
Progresivo futuro	<i>estará cantando</i>	Future	Progressive Dislocated use: epistemic	Periphrastic
Perífrasis prospectiva	<i>va a cantar</i>	Future	Progressive Inchoative Terminative	Periphrastic

Table 3.1: Spanish imperfective and neutral tense forms.

All these forms denote either a past (1), present (2) or (3) future meaning and can combine with past, present and future adverbs:

- (1) AYER *cantaba* / *estaba cantando* cuando llegaste.  
*YESTERDAY* *sing*<sub>PRET.IMPERFECTO</sub> / *sing*<sub>PROG.PAS</sub> *when arrive*<sub>PRET.INDEF</sub>  
 ‘Yesterday I was singing when you arrived’
- (2) HOY *canto* / *estoy cantando* para ti  
*TODAY* *sing*<sub>PRES.SIMPLE</sub> / *sing*<sub>PROG.PRES</sub> *for you*  
 ‘Today I am singing for you’
- (3) MAÑANA *cantaré* / *estaré cantando* / *voy a cantar* cuando llegues  
*TOMORROW* *sing*<sub>FUT.</sub> / *sing*<sub>PROG.FUT</sub> / *sing*<sub>PER.PROSP</sub> *when arrive*<sub>SUBJUNCTIVE</sub>  
 ‘Tomorrow I will sing / will be singing / am going sing when you arrive’

There are differences in the arrays of meanings these past, present and future forms can have: some forms convey more than one meaning while some other forms are

monosemous (as it can be seen in the “temporal-aspectual meaning” column of Table 3.1)

Both past forms –*Pretérito imperfecto* and *Progresivo pasado*- can refer to a situation in progress in the past (progressive meaning) as in example (4). The past form of *Pretérito imperfecto* also has other uses, such as habitual (5) and continuous (6) meanings (Yllera, 1999: p. 25).

(4) El pirata estaba cantando/cantaba (en ese momento)  
*The pirate sing<sub>PAST.PROG</sub> / sing<sub>PRET.IMP</sub> (at that moment)*  
 ‘The pirate was singing in that moment’

(5) El pirata cantaba todos los días  
*The pirate sing<sub>PRET.IMP</sub> everyday*  
 ‘The pirate used to sing everyday’

(6) El pirata cantaba muy bien  
*The pirate sing<sub>PRET.IMP</sub> very well*  
 ‘The pirate sang very well, knew how to sing well’

Additionally, only *Pretérito imperfecto* (7) but not the *Progresivo pasado* (8) can be used to refer to a present or a future situation. In this dislocated meaning the synthetic *Pretérito imperfecto* has the modal meaning of irrealis:

(7) María cantaba hoy/mañana  
*María sing<sub>PRET.IMP</sub> today/tomorrow*  
 ‘María was supposed to sing today/tomorrow’

(8) \*María estaba cantando hoy/mañana  
*María be<sub>PRET.IMP</sub> singing today/tomorrow*  
 ‘María was supposed to sing today’

Both present forms in this study –*Presente simple* and *Progresivo presente*-, can have a progressive meaning, referring to an ongoing situation in the present (9). For the *Progresivo presente* this is the only possible meaning; *Presente simple* can also refer to habitual situations (10) or continuous states (11):

(9) El pirata está cantando/canta (en este momento)  
*The pirate sing<sub>PROG.PRES</sub> / sing<sub>PRES.SIMPLE</sub> (at this moment)*  
 ‘The pirate is singing at this moment’

(10) El pirata canta todos los días  
*The pirate sing<sub>PRES.SIMPLE</sub> everyday*  
 ‘The pirate sings everyday’

- (11) El pirata canta muy bien  
*The pirate sing<sub>PRES.SIMPLE</sub> very well*  
 'The pirate sings very well, knows how to sing well'

Additionally, the *Presente simple* can refer to a near future situation, whilst the *Progresivo presente* cannot (12):

- (12) a. Mañana canto con el coro del colegio  
*Tomorrow sing<sub>PRES.SIMPLE</sub> with the choir of-the school*  
 'Tomorrow I will sing with the school's choir'
- b. \*Mañana estoy cantando con el coro del colegio  
*Tomorrow \*come<sub>PROG.PRES</sub> with the choir of-the school*  
 '\*Tomorrow I am singing (=will sing) with the school's choir'

Similarly, future forms are different in their meanings. The *Futuro simple* form is aspectually neutral and can refer to a situation that will start (13a), be in progress (13a) or finish in the future (13b).

- (13) a. MAÑANA cantaré cuando llegues  
*TOMORROW sing<sub>FUT</sub> when arrive<sub>SUBJUNCTIVE</sub>*  
 'Tomorrow I will start singing/will be singing when you arrive'
- b. MAÑANA leeré tu carta  
*TOMORROW sing<sub>FUT</sub> your letter*  
 'Tomorrow I will read (completely) your letter'

In contrast, the *Progresivo futuro* form can only refer to a continuous situation in the future (14). As Yllera (1999) points out, situations are not usually presented as ongoing in the future, and thus the *Progresivo future* with a progressive meaning is not very frequent and it requires adverbial phrases or information in the context to reinforce this reading of ongoing action in the future:

- (14) a. Cuando llegues, estaré preparando la comida  
*When you arrive<sub>SUBJ</sub> be<sub>FUT</sub> preparing the food*  
 'When you arrive, I will be preparing the food'
- b. ¿Dónde nos encontraremos? Te estaremos esperando  
*Where PRON find<sub>FUT</sub>? PRON be<sub>FUT</sub> waiting*  
 'Where will we meet? We will be waiting for you'

[From Yllera (1999: 3405)]

The *Perífrasis prospectiva* refers to a future situation, but without looking at its internal temporal structure (15):

- (15) MAÑANA                      voy a cantar                      cuando llegues  
 TOMORROW                      *go<sub>PRES</sub> to sing<sub>INF</sub>*                      *when arrive<sub>SUBJUNCTIVE</sub>*  
 'Tomorrow I will sing when you arrive'

*Futuro simple* (16) and *Progresivo futuro* (17) lose their temporal value and get a modal meaning of uncertainty, when used in a context related to the present. The dislocated modal use of the future periphrasis is the typical use of this form given that in the future situations are not usually presented as ongoing (Veiga Rodríguez and Rojo Sánchez, 1999).

- (16) Serán las diez (en este momento).  
*Be<sub>FUT</sub> the ten (in this moment)*  
 'It must be ten o'clock'  
 [From Veiga Rodríguez and Rojo Sánchez (1999: 2894)]

- (17) No han llegado,                      estarán buscando                      la casa.  
*Not have<sub>PRES</sub> arrived, be<sub>FUT</sub> searching                      the house*  
 'They have not arrived yet, they must be looking for the house'.  
 [From Yllera (1998: 3405)]

The *Perífrasis prospectiva* cannot have this dislocated modal meaning (18), unless a progressive layer is added (19):

- (18) a. Van a ser      las diez (en este momento)  
*Go<sub>PRES</sub> to be      the ten (in this moment)*  
 'In a moment it will be ten o'clock'      but not 'It must be ten o'clock'
- b. No han llegado,                      van a buscar la casa'.  
*Not have<sub>PRES</sub> arrived,                      go<sub>PRES</sub> to search the house*  
 'They have not arrived yet; they are going to look for the house' but not 'they must be looking for the house'
- (19) No han llegado,                      van a estar buscando la calle'.  
*Not have<sub>PRES</sub> arrived, go<sub>PRES</sub> to be searching the street*  
 'They have not arrived yet, they must be looking for the street'

In addition to the imperfective and neutral forms presented in Table 3.1, Spanish has other tense forms which have a perfective or perfect aspectual value:



LABEL	EXAMPLE	TENSE VALUE	TEMPORAL-ASPECTUAL MEANING	MORPHOLOGICAL COMPLEXITY
Pretérito indefinido	<i>cantó</i>	Past	PERFECTIVE: Ingressive Terminative	Synthetic
Pretérito perfecto	<i>ha bailado</i>	Past	PERFECT: Experiential Resultative	Periphrastic
Progresivo perfecto	<i>ha estado bailando</i>	Past	PERFECT + PROGRESSIVE Terminated process	Periphrastic

Table 3.2: Spanish perfective tense forms.

Perfective meanings present a situation with boundaries. According to García Fernández (1998) there are two meanings associated to the *Pretérito indefinido*: an ingressive meaning, that focuses on the initial boundary of a situation and usually arises with temporal modification denoting punctual moments (20a) and a terminative meaning, that focuses in the final boundary of a situation (20b):

- (20) a. A las tres hice la comida *Pretérito indefinido*. Ingressive  
*At the three makePF the meal*  
 'At three I cooked (=started cooking) the meal'
- b. El año pasado pasaron un mes en nuestra casa *Pretérito indefinido*. Terminative  
*The year past spendPF a month in our house*  
 'Last year they spent a month at our house'

[Example from García Fernández (1998: 23)]

The *Pretérito perfecto* has a perfect meaning: it brings focus to the result of an event. It can have two different meanings: the experiential meaning that refers to one or more situations in the past that qualify as a present state of already acquired experience (21a); and a resultative reading that refers to the result of an action in the past that is relevant for the present (21b):

- (21) a. Yo ya he visto esa película más de una vez. *Pretérito perfecto*  
*I already have<sub>PRES</sub> see<sub>PARTICIPLE</sub> that movie more than one time*  
 'I have already seen that movie more than one time'
- b. A las cinco ya se había ido. *Pretérito perfecto*  
*At the five already SE have<sub>PRES</sub> go<sub>PARTICIPLE</sub>*  
 'At five he had already gone'

[Example from García Fernández (1999: 51)]

The *Progressive Perfecto* combines the meaning of perfect (the focus on the result state) and the meaning of progressive (the focus on the ongoing process of an action) and generates a meaning of a process which has ceased but has not necessary reached completion:

- (22) Ha estado corrigiendo exámenes *Progressivo perfecto*  
*Have<sub>PRES</sub> be<sub>PARTICIPLE</sub> correct<sub>GERUND</sub> exams*  
 'He has been correcting the exams'

[Example from Yllera (1976: 3406)]

To sum up, the Spanish tense system has a wide array of tense forms that differ as to whether they establish precedence, simultaneous or subsequence relations of the time of the event with respect to a relevant time in the discourse, usually the speech time. We have presented Spanish imperfective and neutral forms in Table 3.1, which differ a) in their temporal value –past, present or future–; b) in their morphological complexity–synthetic or periphrastic–, and c) in the degree of polysemy. Additionally, we have presented the past perfective forms in Table 3.2.

### 3.3. THE ACQUISITION OF TENSE

According to the literature on early language production (Fernández Martínez, 1994, a.o.), children start producing tense morphology from early on. In Spanish, the first tense forms are attested at age 1;01-1;10<sup>28</sup> (Gathercole et al., 1999, 2002, Gili Gaya, 1972, Grinstead et al., 2009a, Hernandez Pina, 1984, Sebastián et al., 2004) or around 2 in bilinguals (Almgrem, 1996, De Lemos, 1981). It has been observed that the first uses of tense morphology are strongly related to the kind of predicate: past tense morphemes are first attached to telic predicates, while atelic predicates are initially marked with present morphology. Such patterns are attested in many languages (Portuguese: de Lemos, 1981; Hebrew: Aamon-Lotem, 1998, Chinese: Li and Bowerman, 1998, Turkish: Aksu-Koç, 1988, 1998, French: Bronckart and Sinclair, 1973, Italian: Antinucci and Miller, 1976; German: Stephany, 1986; English:

<sup>28</sup> First forms produced in Spanish are: *Presente simple* –*canta*–, *Perífrasis prospectiva* –*va a cantar*– and *Preterito perfecto*–*ha cantado*– followed by the *Progressivo simple* –*está cantando*–. However, note that the *Presente simple* of Spanish in 3rd personal singular has been compared to the Root Infinitive in other languages and thus, for some scholars (Ezeizabarrena, 2002; Grinstead et al. 2009, 2014) are non-finite.

Rispoli and Bloom, 1985, Japanese: Rispoli, 1990; Cziko and Koda, 1987, Shirai, 1998), as well as in Spanish (Cromer, 1971, Jacobsen, 1986), and they have been interpreted as an indication of children's dependence on an attestable result state in the situation to distinguish past and non-past. These result states are part of the meaning of telic predicates but not of atelic predicates. Thus, it could be the case that children use past tense markers with telic predicates to convey that the event is terminated or complete (aspectual value) and not that it occurred in the past. Children's early dependence on result states has further been related to children's immature cognitive development and to the assumption that children do not have the property of temporal displacement: they cannot refer to remote moments not related to the here-and-now (Piaget, 1971, Weist et al., 1991).

In contrast, comprehension studies have shown that children can distinguish tense contrasts and that they interpret tense deictically. Weist et al. (2006, 1984) provides evidence that Polish and English children distinguish past vs. future forms at 2;6. Valian (1991) tested English-speaking children on the comprehension of various past, present and future and of past vs. present forms by contrasting the auxiliaries *will* vs. *did*, the copular verb *was* vs. *is* and the auxiliary progressive *was* vs. *is* on a pointing (sentence-to-scene matching) task. Her results showed that 2-year-olds' performance was accurate with *will* vs. *did*, and copula *was* vs. *is*, but not past vs. present progressive. 3-year-olds and 4-year-olds could distinguish non-past and past in all the three contrasts. Nevertheless, completion information in the situation and in the aspect marking of the forms seems to be important for children's comprehension of tense morphemes. Even though, Weist et al. (Wagner et al., 2009, 1991) found that English and Polish speaking children could interpret the basic tense distinctions at the age of 2;6, the forms they tested also contrasted perfective vs. imperfective aspect and result states were shown in the pictures. Successful comprehension of tense with English present progressive vs. simple past was attested at age 2 in an intermodal preferential looking task with familiar and novel verbs (Wagner, 1998). However, in this task aspect and tense information were confounded, as the contrast tested was complete past situations vs. present ongoing situations and the forms used were simple past vs. present progressive. Additionally,

Wagner (1998, 2001) showed that 2-year-old children acquiring English differentiate past and present progressive and future periphrases in combination with adverbials and correctly linked them to past, present and future situations. In the absence of adverbs, temporal ordering information was interpreted correctly when it was reinforced by completion information in the situation (2006, Wagner, 2001). But, when children were asked to distinguish between English present and past progressive (*is V-ing* vs. *was V-ing*) they did not succeed until age 4 (Hollebrandse et al., 2010, Wagner, 1998). These findings suggest that grammatical aspect helps in the understanding of tense.

More recently, Hollebrandse et al. (2010) tested five-year-old's comprehension of tense morphemes in 17 languages in an aspectually neutral way –trying to keep imperfective morphology constant across languages and across temporal values (past, present or future), using atelic predicates and without showing result states in the materials of the task– so that there are no completion clues that will reinforce the distinction of the different temporal values. The task consisted of a sentence-to-situation matching task testing past, present and future tenses. They found adult-like comprehension of present tense forms across languages; comprehension of past and future forms depended on the language: for example, the comprehension of past and future forms was at ceiling in Slavic languages but not in Norwegian, Danish and Dutch. They proposed that the crosslinguistic differences are related to the ambiguity of the forms and their informativeness:

(23) Informativeness hypothesis (Hollebrandse et al., 2010)

If two or more temporal forms share a meaning, and thus they compete for the same temporal meaning, children perform better on the most informative one.

The “most informative form” is a form that is most restrictive in meaning, the one that is most specific (24), which can be determined by the calculation of an informativeness ratio (25):

(24) If form A and form B share a temporal meaning, A is more informative than B iff the informativeness ratio of A is bigger than the informativeness ratio of B.

(25) The informativeness ratio is determined with respect to the temporal structures the forms share. The informative ratio of a form is the ratio between the number of

temporal meanings that the form shares with other forms and the total number of temporal meanings the form conveys.

So, for example, according to Hollebrandse et al. (2006), in a language like Dutch, the simple past form conveys past perfective and past imperfective meaning, while the present perfect form only conveys the past perfective meaning. Thus, in Dutch the present perfect has an informativity ratio (IR) of 1, and is more informative than the simple past (IR=0.5). Similarly, in German, the simple past (IR=0.5) form conveys past perfective and past imperfective meaning, while the present perfect form only conveys the past perfective meaning (IR=19). The form used for testing German was the present perfect, which is the most informative one in the language, while in Dutch the form used for testing was the simple past, which is not the most informative one. Results for the past in German were significantly better than for Dutch. Thus, under the Informativeness Hypothesis in (23), form polysemy is predicted to slow down the acquisition process: forms that are more ambiguous would be later acquired than forms that have a lower degree of ambiguity.

As a summary, children start producing tense morphemes form very early on (1;01-2;0), but first uses of these morphemes depend on the aspect value of the predicate and, in the case of the past vs. present, on the availability of a result state at the moment of speech. Comprehension studies suggest that tense markings are distinguished by children as young as two (Hollebrandse et al., 2010, Wagner, 2001, Wagner et al., 2009, Weist et al., 1991), though the evidence is not conclusive since past forms are often marked with PF and present forms with IPF aspect and the situations usually depicted a result state. Additionally, crosslinguistic differences have been found in the comprehension of tense morphemes (Hollebrandse et al., 2010) which have been attributed to the ambiguity of the forms and their degree of informativeness.

### **3.4. AIMS OF THE STUDY**

The present study examines Spanish 5-year-old children's comprehension of past, present and future tense forms and their production of tense forms to refer to past, present and future situations respectively, teasing apart predicational and

grammatical aspect. Predicational aspect and grammatical aspect are maintained constant by using atelic imperfective or neutral predicates, which do not entail a result state. Therefore, the tasks are testing only tense, since no aspectual information in the form or in the situation could be facilitating the task.

Additionally, the experiment aims to investigate the effect of the kind of form. The wide array of tense forms in Spanish (as shown in 3.2) makes it an ideal language to test whether the degree of informativeness of a certain form accelerates or delays the acquisition process, as proposed by Hollebrandse et al. (2001). Given the discussion of the forms in section 3.2 and summarized in Table 3.1, we make the following predictions derived from the Informativeness hypothesis in (23):

(26) Predictions for the acquisition of Spanish tense forms according to the Informativeness hypothesis:

- a. PAST FORMS: *Progresivo pasado* (periphrastic) > *Preterito imperfecto* (synthetic)

The *Preterito imperfecto* conveys progressive, habitual, continuous and irrealis meanings. Therefore, in past progressive contexts, children must perform better (>) with the *Progresivo pasado* (IR=1) than with the *Preterito imperfecto* (IR=0.25)

- b. PRESENT FORMS: *Progresivo presente* (periphrastic) > *Presente simple* (synthetic)

The *Presente simple* conveys progressive, habitual, continuous and near future meanings. The *Progresivo presente* conveys progressive meaning. Thus, children must perform better with the *Progresivo presente* (IR= 1) than with the *Presente simple* (IR=0.25) for present progressive meaning contexts.

- c. FUTURE FORMS: *Progresivo futuro* (periphrastic) > *Perífrasis prospectiva* (periphrastic) > *Futuro simple* (synthetic)

The *Futuro simple* conveys progressive, inchoative, terminative and epistemic meanings. The *Progresivo futuro* conveys progressive and epistemic meanings. The *Perífrasis prospectiva* conveys progressive, inchoative and terminative meanings. Thus, in the futures situation, children must perform better with the *Progresivo futuro* (IR=0.5) than with the *Perífrasis prospectiva* (IR=0.33) and the *Futuro simple* (IR=0.25)

We will test comprehension with imperfective or neutral atelic predicates and production, using the same materials, to see whether children provide more adult-like responses for the forms with higher informativity ratio in comprehension and to check whether these higher informativity forms are preferred by children in

production. Assuming the differences in ratios of informativity may affect 5-year-old children in their acquisition of tense marked forms, we expect better performance in with periphrastic forms –specially the progressive– than with synthetic forms and with forms of the past and the present than with forms of the future in comprehension and a preference for periphrastic forms in production.

### 3.5. THE STUDY

#### 3.5.1. Participants

The tense study involved data from 41 children and 20 adults divided in two groups: one group was tested with periphrastic forms and the other with synthetic forms.

SYNTHETIC FORMS	PERIPHRASTIC FORMS
20 children age: 5;03-5;11 (mean age 5;08)	21 children age: 5;01-5;11 (mean 5;07)
10 adults as control (mean age 35;11 )	10 adults as control (mean age 27;06)

Table 3.3: Participants in the Tense Experiment (comprehension and production)

All children were monolingual native speakers of Spanish and attended schools where Spanish is the vehicular language in Pamplona and Valencia. All adults were native Spanish speakers and some of them were also competent speakers of other languages such as Basque (11 of them) or English (5 of them). All of them have university degrees.

#### 3.5.2. Design, procedure and materials<sup>29</sup>

Children were tested on a sentence-to-scene matching task for comprehension and a sentence completion task for production. The set-up was based on Wagner's (1991) idea of establishing a parallel between time and spatial location<sup>30</sup>.

<sup>29</sup> The data presented here belong to a crosslinguistic study on 17 languages. The design was developed within the project COST A33 Crosslinguistically Robust Stages of Children's Linguistic Performance by the Tense group led by Bart Hollebrandse and Fabrizio Arosio (Hollebrandse et al., 2010).

Both tasks used videos as stimuli. In the videos there was a road drawn on the floor with three landmarks marking three different locations: a table, a plant and a bike (Figure 3.1).



Figure 3.1: Image of the video setting with the road and the three locations.

One character –a pirate, a clown or a king– was travelling along this road, and performing a certain action at each of the three landmarks on the road. As the character had to perform the action in all three spatial locations, a parallelism was established with temporal situations: the location at which a certain action had been performed was the PAST location, the location at which a certain action was being performed was the PRES location and the location at which a certain action was going to be performed was the FUT location. If, for example, the pirate had started performing the action near the table and the production test query was asked when the pirate was performing the action by the plant, the table was the past location; the plant was the present location and the bike was the future location. The

<sup>30</sup> The method is similar to Wagner (2002) and Kazanina & Philips (2007). However, some differences can be pointed out:

- No telic verbs were used. On the contrary, Kazanina & Philips (2007) used this task to test grammatical aspect by contrasting complete and incomplete versions of an event and their relation to a PF and IPF predicate. Wagner (2002) used this task to test whether tense morphology is affected by aspect by contrasting complete and incomplete past predicates that corresponded to past PF and IPF predicates. In the present experiment we did not want to have grammatical aspect as a confounding factor. Therefore we used atelic predicates with IPF morphology.
- No inky footsteps trace the path of the character, and thus no constant clue of the temporal ordering of the events was provided. Children had to rely on their memory.



character performed the action in each of the locations for about 5 seconds, so each video lasted for a maximum of 30 seconds.

The timing of the test query was crucial because it established the link between the tense values (past, present or future) and the landmarks on the road. In the case of past and future, the query was always asked in the second location, so that there was only one possible location in which the action had been performed (PAST location) and one in which it was still going to be performed (FUT location). In the case of the present, the query was asked while the character was performing the action either in the second or in the third location. Thus, the amount of queries asked in the second location is higher (see Table 3.4 and Table 3.5). The walking direction of the character was counterbalanced: the character traveled along the road either from left to right or from right to left, so that the temporal reference of the three different landmarks varied across items.

The participants were divided into two groups, one for testing synthetic forms (27) and one for testing periphrastic forms (28). Furthermore, as the *Progresivo futuro* is rarely used in Spanish for tense meaning (see section 3.2) and in the experiment this form was too difficult to understand for children, half of the children in the periphrastic group were tested with the *Perífrasis prospectiva* (28d) instead of the *Progresivo futuro* (28c). (27)/(28) provide examples of the comprehension test queries:

(27) Test query for comprehension: SYNTHETIC FORMS

- |    |                                 |                    |                             |
|----|---------------------------------|--------------------|-----------------------------|
| a. | ¿Dónde <b>estornuda-ba</b>      | el pirata?         | <i>Preterito Imperfecto</i> |
|    | <i>Where sneeze-IPF.PAST3s</i>  | <i>the pirate?</i> |                             |
|    | ‘Where did the-pirate sneeze?’  |                    |                             |
| b. | ¿Dónde <b>estornuda-Ø</b>       | el pirata?         | <i>Presente simple</i>      |
|    | <i>Where sneeze-PRES3s</i>      | <i>the pirate?</i> |                             |
|    | ‘Where does the-pirate sneeze?’ |                    |                             |
| c. | ¿Dónde <b>estornuda-rá</b>      | el pirata?         | <i>Futuro simple</i>        |
|    | <i>Where sneeze-FUT3s</i>       | <i>the pirate?</i> |                             |
|    | ‘Where will the-pirate sneeze?’ |                    |                             |

(28) Test query for comprehension: PERIPHRASTIC GROUP

- |    |                                  |                      |                   |                          |
|----|----------------------------------|----------------------|-------------------|--------------------------|
| a. | ¿Dónde <b>estaba-ba</b>          | <b>estornuda-ndo</b> | el pirata?        | <i>Progresivo pasado</i> |
|    | <i>Where was-IPF.PAST3SG</i>     | <i>sneeze-Gerund</i> | <i>the pirate</i> |                          |
|    | ‘Where was the pirate sneezing?’ |                      |                   |                          |

- b. ¿Dónde **está-Ø** **estornud-ando** el pirata? *Progresivo presente*  
*Where is- PRES3s sneeze-Gerund the pirate*  
 'Where is the pirate sneezing?'
- c. ¿Dónde **esta-rá** **estornud-ando** el pirata? *Progresivo futuro*  
*The clown snore- FUT3SGs sneeze-Gerund el pirata*  
 'Where will the pirate be sneezing?'
- d. ¿Dónde **va** **a estornudar** el pirata? *Perífrasis progresiva*  
*The clown go PRES3SG to sneeze-Infinitive el pirata*  
 'Where is the pirate going to sneeze?'

As mentioned in section 3.2, the two sets of forms differ in that the tense information in the synthetic forms is encoded by an accumulative morpheme that also specifies aspectual information (i.e. imperfective). In the periphrastic forms the tense morpheme on the auxiliary is also cumulative and specifies aspectual information and there is a separate element, the gerund that bears aspectual information (i.e. progressive). Thus, tense and aspect information are separated: tense is marked on the auxiliary while aspectual information is encoded on the participle.

The task of the participant was to indicate which of the three landmarks on the road corresponded to the situation described by the form in the interrogative sentence of test queries (27) or (28). If, for example, the test query in (27)/(28) was made while the pirate was sneezing near the plant having performed the action at the table, as in Figure 3.1, the expected response for past forms (27a)/(28a) was the table, the expected response for present forms (27b)/(28b) was the plant and the expected response for future forms (27c)/(28c) was the bike.

For production, the test query was also asked while the action was being performed in one of the locations. At that moment, one of the landmarks was named and the participant had to finish the sentence:

(29) Test query for production:

EXP. Cerca de la planta / la mesa / la bici, el pirata ...  
 'By the plant / the table / the bike, the pirate ...'

CHILD. ...estornuda-PAST/PRES/FUT  
 ...sneeze-PAST/PRES/FUT

We expected participants to produce past, present or future forms respectively when the test query asked about a past, present or future locations.

Six different atelic verbs were acted out in the videos; each verb was tested three times, once with each of the three different temporal values (see Table 3.4 and Table 3.5). The verbs were atelic so no reinforcement of aspectual completion and no potential result state in the task could help children to distinguish past and present morphology. The verbs were intransitive and morphologically regular (to control that all verbs had the same morphological and syntactic complexity). The verbs belonged to two lexical (sub)classes of predicates: activities or continuous predicates (30) and semelfactives or iterative predicates (31):

(30) Activities; continuous predicates:

<i>Jugar</i>	‘to play’
<i>Bailar</i>	‘to dance’
<i>Arrodillarse</i> <sup>31</sup>	‘to kneel down’

(31) Semelfactives; iterative predicates:

<i>Estornudar</i>	‘to sneeze’
<i>Toser</i>	‘to cough’
<i>Roncar</i>	‘to snore’

Both classes of predicates are both dynamic and atelic, but they differ in that the activity predicates in (30) are durative, while the semelfactives in (31) are punctual (Hollebrandse et al., 2010). In the video both types of events took a short interval of time to develop, and thus semelfative verbs were not represented as punctual but as iterative actions.

The test was administered in two sessions, testing 9 items for comprehension and 9 items for production in each session, up to a total of 18 comprehension items and 18 production items. The comprehension test preceded production, so as to prompt the participants with the target verbs to use in production. In addition to this, there was a training section at the beginning of each session containing 3 items (TR 1-6 in Table 3.4), so 6 training items in total. Practice items were similar to test items, except that they included temporally agreeing deictic adverbs – ‘antes’ *before*, ‘ahora’

<sup>31</sup> ‘Arrodillarse’ -*to kneel down*-, though it is normally a change of state predicate in Spanish and thus a telic predicate, it was conceived as a continuous predicate. The movie showed the character going from upright to kneeling position and remaining in kneeling position. The most natural way to denote a continuous state in that case is ‘estar arrodillado’ -*to be on one’s knees*-.

*now* and ‘después’ *later-* to reinforce their temporal value. The test items did not include these adverbs.

ITEM	VERB	CHARACTER	DIRECTION	LOCATION	TENSE FORM	TARGET ANSWER
TR1	Snore	Pirate	Right to left	2nd	Past	Bike
TR2	Dance	King	Left to right	3rd	Present	Bike
TR3	Cough	Clown	Right to left	2nd	Future	Table
TR4	Play	King	Right to left	2nd	Past	Bike
TR5	Kneel	Clown	Right to left	3rd	Present	Table
TR6	Sneeze	Pirate	Left to right	2nd	Future	Bike
1	Play	Clown	Left to right	2nd	Present	Plant
2	Sneeze	Pirate	Left to right	2nd	Past	Table
3	Kneel	King	Left to right	2nd	Future	Bike
4	Dance	Clown	Right to left	2nd	Past	Bike
5	Snore	King	Left to right	2nd	Future	Bike
6	Cough	Pirate	Left to right	3rd	Present	Bike
7	Sneeze	King	Right to left	2nd	Present	Plant
8	Kneel	Clown	Right to left	2nd	Past	Bike
9	Play	Pirate	Right to left	2nd	Future	Table
10	Snore	Pirate	Right to left	2nd	Past	Bike
11	Cough	Clown	Right to left	2nd	Future	Table
12	Dance	King	Left to right	3rd	Present	Bike
13	Kneel	Pirate	Left to right	2nd	Present	Plant
14	Play	King	Right to left	2nd	Past	Bike
15	Sneeze	Clown	Left to right	2nd	Future	Bike
16	Cough	King	Right to left	2nd	Past	Bike
17	Snore	Clown	Left to right	3rd	Present	Bike
18	Dance	Pirate	Right to left	2nd	Future	Bike

Table 3.4: List of items for comprehension

ITEM	VERB	CHARACTER	DIRECTION	LOCATION	TEST QUERY	TARGET ANSWER
1	Sneeze	Clown	Left to right	2nd	Bike	Future
2	Dance	Pirate	Right to left	2nd	Bike	Past
3	Cough	King	Right to left	3rd	Table	Present
4	Play	Clown	Left to right	2nd	Table	Past
5	Kneel	Pirate	Left to right	2nd	Plant	Present
6	Snore	King	Left to right	2nd	Bike	Fut
7	Dance	Clown	Right to left	3rd	Table	Present
8	Sneeze	Pirate	Left to right	2nd	Bike	Future
9	Cough	King	Right to left	2nd	Bike	Past
10	Kneel	King	Left to right	2nd	Table	Past
11	Snore	Snore	Left to right	2nd	Plant	Present
12	Play	Pirate	Right to left	2nd	Table	Future
13	Cough	Clown	Right to left	2nd	Bike	Past
14	Sneeze	Pirate	Left to right	3rd	Bike	Present
15	Dance	King	Left to right	2nd	Table	Future
16	Snore	Pirate	Right to left	2nd	Table	Past
17	Kneel	Clown	Right to left	2nd	Bike	Future
18	Play	King	Right to left	3rd	Table	Present

Table 3.5: List of items for production

As shown in Table 3.4 and Table 3.5, test items varied a) in the kind of verb – continuous or iterative–, b) in the character performing the action –clown, pirate or king– and c) in their temporal value –past, present or future– which depended on the direction of the path along the road, -from left to right or from right to left-, on the location at which the test query was asked and on the tense form (for comprehension) or the landmark (for production) of the test query.

Two kinds of forms were tested -synthetic and periphrastic forms- with two kinds of predicates –continuous and iterative-. Age group and kind of form were the between-subject variables; predicate kind and temporal value of the form were the within-subject variables. The dependent variable was the participant's response: the choice of location in the comprehension experiment and the form produced in the production experiment. Additionally, the choice or the production of a past form for a past location, a present form for a present location and a future form for a future location were coded as matching responses.

### 3.6. RESULTS

#### 3.6.1. Comprehension

The answers were coded depending on the meaning associated to the different forms (the location chosen). Figure 3.2 and Figure 3.3 show the temporal meaning associated with each of the tense forms by adults and children when tested with synthetic and periphrastic forms. For both sets of forms, adults chose the corresponding location around 100% of the times in all conditions. The 5-year old children distinguished between past, present and future forms: they associated the present forms to the present time location in most cases, and the past forms to the past time situation. For future forms, they associated the *Futuro simple* 'bailará' and the *Perífrasis prospectiva* 'va a bailar' to the future meaning; however, the *Progresivo Futuro* 'estará bailando' was associated to the present meaning location and not to the future location. Remember that only half of the children from the periphrastic group were tested with the *Progresivo Futuro* 'estará bailando', so there are less data points for this form as for the *Perífrasis prospectiva* 'va a bailar'

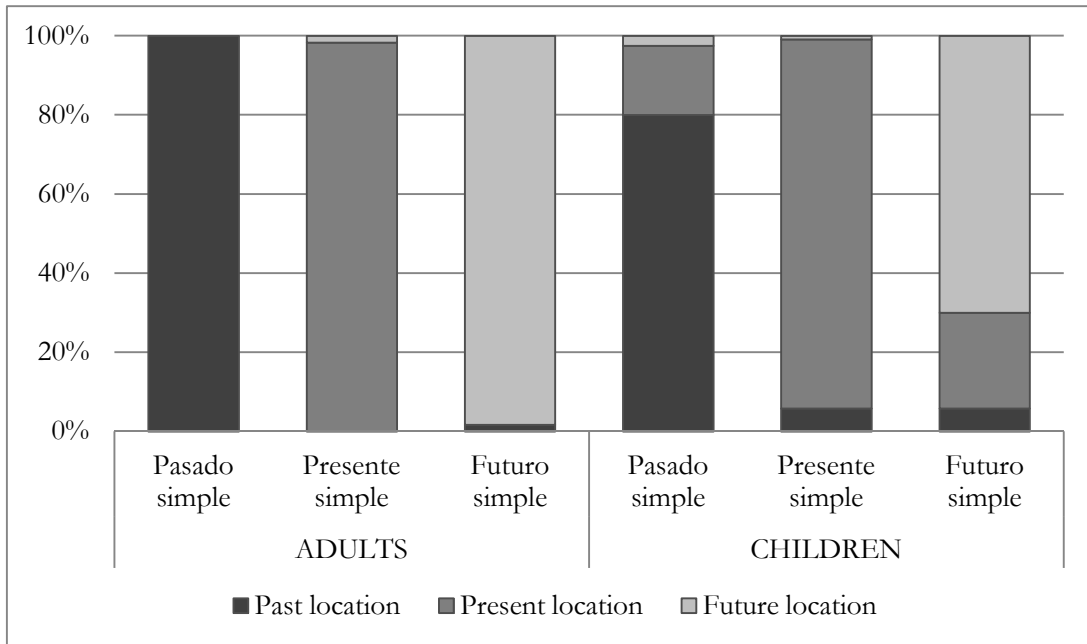


Figure 3.2: Meaning associated to the SYNTHETIC forms by age group (comprehension)

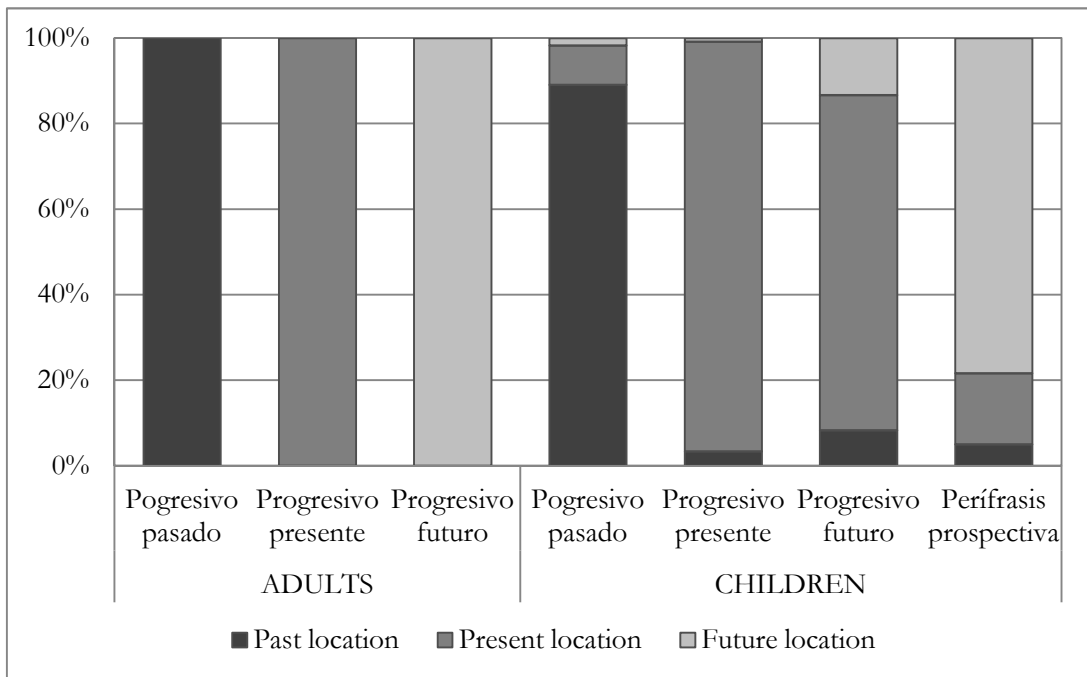


Figure 3.3: Meaning associated to the PERIPHRASTIC forms by age group (comprehension)

As it can be seen in Figure 3.2 and Figure 3.3, adults showed a consistency in their responses across forms, they matched past, present and future forms with past, present and future meaning respectively, while children showed more variability in

their responses. An ANOVA<sup>32</sup> on the amount of matching responses of temporal value with temporal location for the different temporal value of the forms –past, present, future (including prospective)– was carried out with the kind of verb –continuous or iterative– as within-subject variables and with age group and form –synthetic vs. periphrastic– as between-subject variables. The test revealed that there was a main effect of age group ( $F(1,45)=8.693$ ;  $p<.05$ ): adult's rates of matches were higher than children's. There was a main effect of the temporal value of the form ( $F(1,45)=4.485$ ;  $p<.05$ ) and the interaction of the tense value of the form and the age group was significant ( $F(1,45)=5.058$ ;  $p<.05$ ): the different tense values are not treated alike by adults and children. Children provided more matching responses for the present and related sometimes the future and the past forms to the present location, especially in the case of the *Progresivo presente*. There was no main effect of kind of form ( $F(1,45)=.043$ ;  $p>.05$ ) nor of the kind of verb ( $F(1,45)=.600$ ;  $p>.05$ ) and none of the interactions of these variables was significant. ANOVAs within each age group revealed that while for adults the rate of matches did not differ depending on the temporal value of the form given ( $F(1,8)=1.000$ ;  $p>.05$ ) for children the rate of matches was significantly different depending on the temporal value of the form ( $F(1,39)=24.172$ ;  $p<.001$ ). T-tests revealed that there was no difference in children's rates of matches between past and present forms ( $t=-1.661$ ;  $p>.05$ ) but there were differences between past and future forms ( $t=-4.001$ ;  $p<.001$ ) and present and future forms ( $t=-4.001$ ;  $p<.001$ ): the rates of matches were lower for the future.

As in the future children were tested with the synthetic *future simple*, the periphrastic *futuro progresivo* (half of the children in the periphrastic form group) and the prospective periphrasis *ir a + inf* (half of the children in the periphrastic form group), further analyses were carried out in this variable. Results show that there were differences between synthetic and periphrastic forms for the future for children ( $t=2.242$ ;  $p<.05$ ). Testing only periphrastic forms for children, analyses

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<sup>32</sup> The Kolmogorov-Smirnov test was performed and no differences between the distribution of our data and the normal distribution were found in the Past ( $Z=.411$ ;  $p<.001$ ), Present ( $Z=.477$ ;  $p<.01$ ) and Future ( $Z=.261$ ;  $p<.001$ ).

reveal that rates of matches of prospective periphrases with the future location were higher than the matches for the periphrastic future ( $t=-7.322$ ;  $p<.001$ ).

### 3.6.2. Production

The production data was coded depending on the tense value of each of the forms produced: past, present or future and responses that did not fit to these categories were coded as 'other' responses. Forms were also coded for their morphological complexity: synthetic and periphrastic. For past, present and future responses we also distinguished whether the forms produced were synthetic or periphrastic. Additionally, for past forms, we distinguished whether the forms were perfective or imperfective. The classification of the forms obtained is shown in Table 3.6:

TENSE AND ASPECT VALUE		FORM	EXAMPLE	MORP. COMPLEXITY
PAST	PF	Pretérito indefinido	<i>Bailó</i> <i>dance</i> <sub>PF.PAST</sub>	Synthetic
		Pretérito perfecto	<i>Ha bailado</i> <i>have</i> <sub>PRES</sub> <i>dance</i> <sub>PARTICIPLE</sub>	Periphrastic
		Progresivo perfecto	<i>Ha estado bailando</i> <i>have</i> <sub>PRES</sub> <i>be</i> <sub>PARTICIPLE</sub> <i>dance</i> <sub>GERUND</sub>	
	IPF	Pretérito imperfecto	<i>Bailaba</i> <i>dance</i> <sub>IPF.PAST</sub>	Synthetic
Progresivo imperfecto		<i>Estaba bailando</i> <i>be</i> <sub>IPF.PAST</sub> <i>dance</i> <sub>GERUND</sub>	Periphrastic	
PRESENT		Presente simple	<i>Baila</i> <i>dance</i> <sub>PRES</sub>	Synthetic
		Progresivo presente	<i>Está bailando</i> <i>be</i> <sub>PRES</sub> <i>dance</i> <sub>GERUND</sub>	Periphrastic



TENSE AND ASPECT VALUE	FORM	EXAMPLE	MORP. COMPLEXITY
FUTURE	Futuro simple	<i>Bailará</i> <i>dance</i> <sub>FUT</sub>	Synthetic
	Perífrasis prospectiva	<i>Va a bailar</i> <i>go</i> <sub>PRES</sub> <i>to dance</i> <sub>INFINITIVE</sub>	Periphrastic
		<i>Iba a bailar</i> <i>Go</i> <sub>IPF.PAST</sub> <i>to dance</i> <sub>INFINITIVE</sub>	
Progresivo futuro	<i>Estará bailando</i> <i>be</i> <sub>FUT</sub> <i>dance</i> <sub>GERUND</sub>		

Table 3.6: Coding of forms obtained in the production task

Additionally, subjects produced other forms that do not fit in the categories in Table 3.6, such as infinitives *bailar* ‘to dance’ or gerunds *bailando* ‘dancing’; modal periphrases such as *tiene/tenía que bailar* ‘has/had to dance’, unrelated or non-valid responses such as *está constipado* ‘he has a cold’, *se ha/había ido /va a ir* ‘he has/had gone/is leaving’, *estaba en la bici* ‘he was at the bike’ or no responses. All these responses were coded as ‘other’ responses.

Overall, adults tended to produce the corresponding tense form for each of the situation: past, present and future forms for past, present and future locations, respectively. Children also tended to produce a higher amount of past forms for the past situation, a higher amount of present tenses for the present situation and a higher amount of future tenses for the future situation. However, the amount of matches depends on the temporal location: around 55% of past forms were produced to refer to the past location; almost 70% of present forms were used in the present location and around 35% of future forms were uttered for the future location. In addition to these forms, children tended to overuse present forms in all situations and they also used past forms in all situations (Figure 3.4).

Data corresponding to the synthetic and periphrastic groups have been collapsed in Figure 3.4.

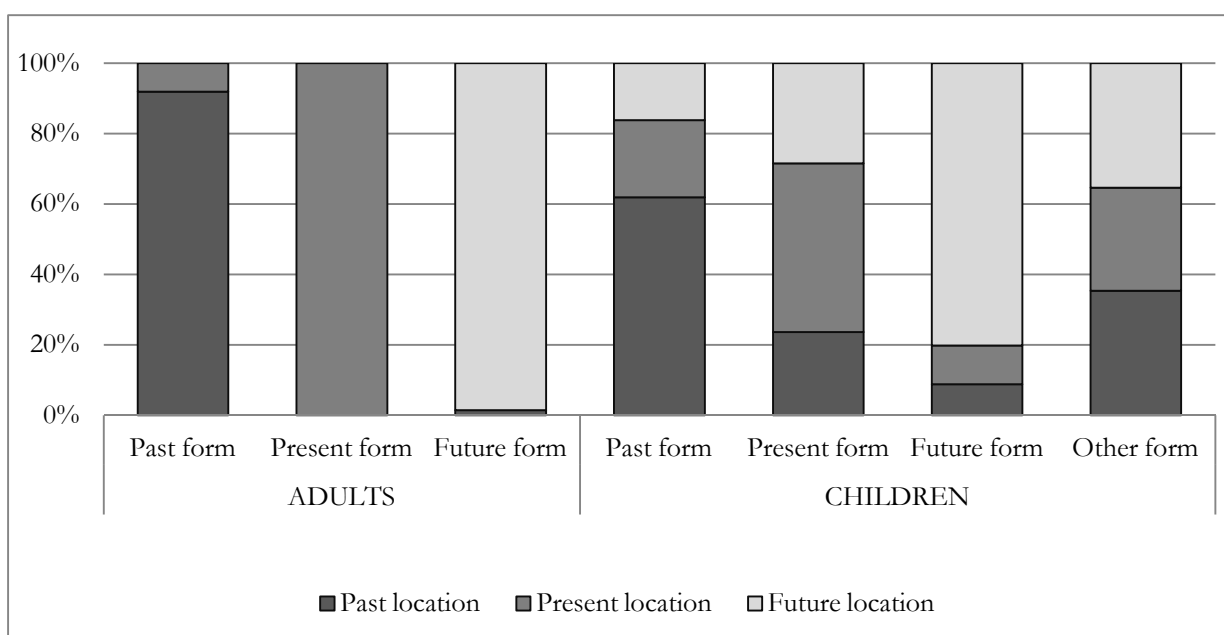


Figure 3.4: Distribution of forms produced for each of the temporal locations by adults and children

Chi-square analyses revealed that both adults and children gave different responses for the three different temporal locations ( $\chi^2= 372.951$ ;  $p<.001$  for adults and  $\chi^2= 207.533$ ;  $p<.001$  for children), meaning that participants distinguished the past, present and future locations. There were no differences ( $\chi^2= 1.260$ ;  $p>.05$ ) in the amount of matching responses depending on the kind of predicate (iterative or continuous). However, the amount of matching responses were higher for adults than for children for the past location ( $\chi^2= 50.552$ ;  $p<.001$ ) the present location ( $\chi^2= 12.623$ ;  $p<.001$ ) and the future location ( $\chi^2= 112.662$ ;  $p<.001$ ).

Differences were also observed regarding the kind of form (synthetic or periphrastic) produced a) depending on the age group ( $\chi^2= 144.745$ ;  $p<.001$ ) and b) depending on the kind of form participants were tested with in the comprehension task (adults:  $\chi^2= 103.531$ ;  $p<.001$ ; children:  $\chi^2= 39.828$ ;  $p<.001$ ). Adults seem to be primed by the kind of form used in the comprehension part: they tended to produce synthetic forms when tested with synthetic forms and periphrastic forms when tested with periphrastic forms. In contrast, children preferred to use periphrastic forms, no matter if they were previously tested with synthetic or periphrastic forms in the comprehension task. Most of the periphrastic forms that children produce

were progressives for past and present and prospective periphrases for the future (Figure 3.5 and Figure 3.6).

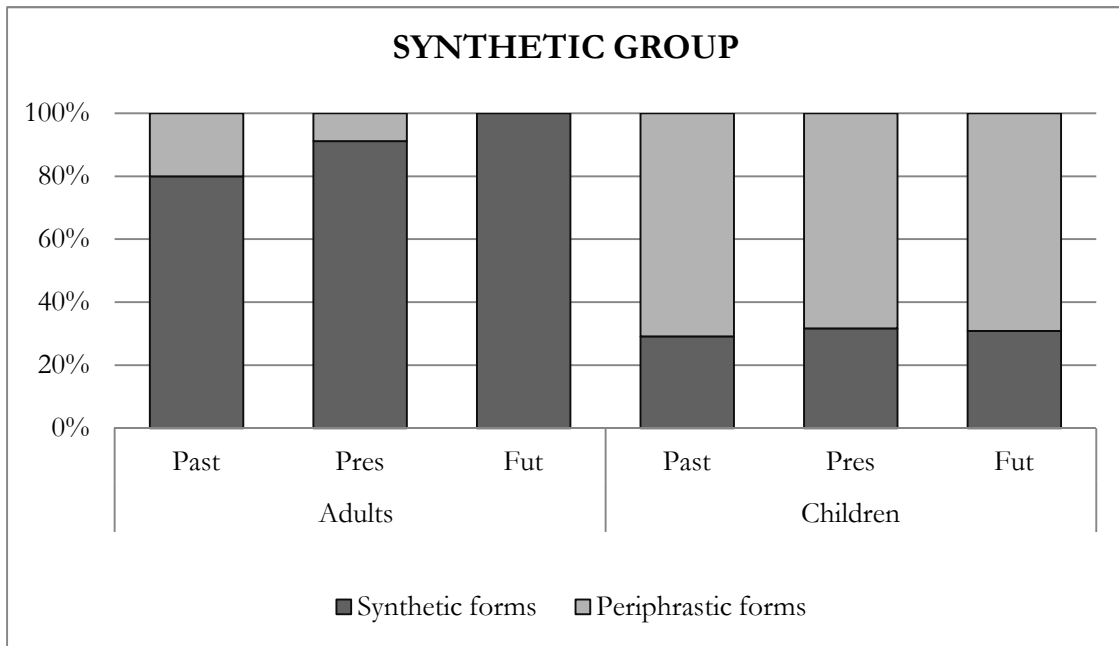


Figure 3.5: Kind of form produced by adults and children in the group tested with synthetic forms for comprehension).

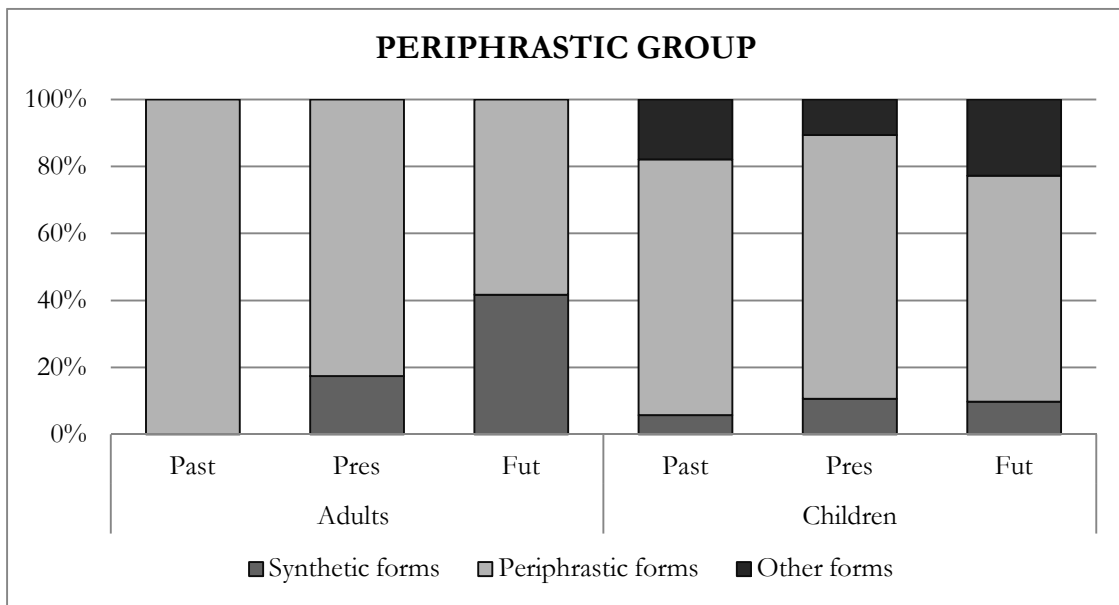


Figure 3.6: Kind of form produced by adults and children in the group tested with synthetic forms for comprehension).

However, although the adults tended to be primed by the kind of morphology they were tested with in comprehension, they also produced some other forms that were not used in the comprehension task: for the past location adults tended to produce

perfective forms (the synthetic *pretérito indefinido* and the periphrastic *pretérito perfecto*) even though they were tested with imperfective forms (the synthetic *pretérito imperfecto* and the periphrastic *perífrasis progresiva* in the synthetic and periphrastic group respectively). Instead, children, unlike adults, produced mostly imperfective forms. The amount of PF and IPF responses for the past situation was significantly different depending on the age group ( $\chi^2 = 78.279$ ;  $p < .001$ ). Data from the synthetic and periphrastic groups are conflated in Figure 3.7

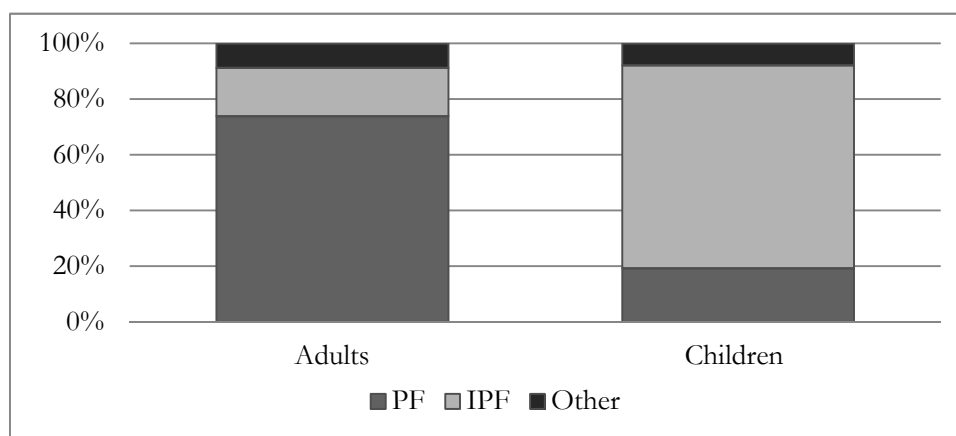


Figure 3.7: Percentage of PF and IPF responses for the past situation by age group

### 3.7. DISCUSSION

The present study aimed to test 5-year-old Spanish children's comprehension and production of tense markings with a set of materials that did not portrayed any result state that could facilitate the task for children and, in the comprehension, with atelic verbs marked with neutral or imperfective aspect, so no aspectual clue (completion or a result state) was added and children relied only on tense information to solve the tasks.

Different forms were tested in comprehension for each of the tense values: *Pretérito imperfecto* and *Progresivo pasado* for the past, *Presente simple* and *Progresivo presente* for the present and *Futuro simple*, *Progresivo futuro* and *Perífrasis prospectiva* for the future. These forms contrast in their morphological complexity and their degree of polysemy. The use of these different forms allowed us to test if the degree of informativeness of a certain form –whether the form is more or less polysemic and, therefore, more or less specific for a certain meaning– affects the acquisition process, as proposed by

Hollebrandse et al. (2006). Accordingly, we predicted that progressive forms *Progresivo pasado*, *presente* and *futuro* 'estaba/está/estará bailando' and the *Perífrasis prospectiva* 'va a bailar' should be comprehended better and preferred in production over the synthetic forms: the *Preterito imperfecto* 'bailaba', the *Presente simple* 'baila' and the *Futuro simple* 'bailará', as the periphrastic forms convey fewer meanings than the corresponding simple forms.

The results confirmed that, overall, five-year-old Spanish children understand tense morphology adult-like: they tended to relate past, present and future morphology to past, present and future times. Additionally, they tended to produce past, present and future forms for past, present and future references, respectively. What is crucial in this experiment, in contrast to previous experiments in the literature (Wagner, 2001, Yllera, 1999), is that they did so without aspectual clues and in the absence of completion or result state in the movies, given that all the predicates used in this experiment were atelic and these predicates do not denote any change of state or result state to be shown in the experiment.

As for the different forms tested, comprehension data showed that the kind of morphology did not affect children's comprehension of tense: there were no differences between the different sets of forms. In fact, children's performance was adult-like with all forms, except for the *Progresivo futuro* 'estará cantando', which was often related to the present situation instead of the future. Children's misunderstanding of the *Progressive futuro* can be explained by the fact that in adult language the progressive future progressive is more frequently used in a context related to the present with the modal meaning of uncertainty as in (17) and less frequently used as a future form with a progressive meaning, given that it is not usual to refer to ongoing situations in the future (Hollebrandse et al., 2010). In fact, even though adults' rates of matches of the future progressive with the future meaning were at ceiling in comprehension, in production they tended to avoid the use of this form and produce the *future simple* instead, in the periphrastic form group (40% of the time).

So far, comprehension data showed that 5-year-old Spanish children have already acquired the semantics of tense markings and, as no difference between forms has been found apart from the lack of understanding of *Progresivo future*, the children we tested are too old to provide evidence for or against the Informativeness hypothesis (Hollebrandse et al., 2010).

Production results showed that, although children can comprehend all forms, they mostly used periphrastic forms, *Progresivo pasado* and *presente 'estaba/está cantando'* for the past and the present situations, and the *Perífrasis prospectiva 'va a cantar'* for the future situation. This behaviour contrasts with that of adults, who were primed by the kind of form used in the comprehension part, using synthetic forms when tested with synthetic forms and periphrastic forms when tested with periphrastic forms. Therefore, children seem to prefer the most specific and less ambiguous form for the past, present and future situations, what seems to go in line with the Informativeness hypothesis (Hodgson, 2003) given that the forms preferred for children in production are those with a lower degree of polysemy. However, another difference between adults' and children's was found in production on the aspectual value of the forms used for the past location: adults tended to produce PF forms while children produced IPF forms. What was unexpected is that adults produced PF forms even though they were primed with IPF forms in comprehension. In contrast to adults' responses, children produced IPF forms for the past situation. The use of PF forms by adults in the production task casts some doubts about the applicability of the Informativeness hypothesis. On the one hand, to calculate the ratios for the past tense forms used in production we only took into account the progressive meaning of the past imperfective forms. However, the fact that adults also produced PF forms shows that the situation in the video can be described either as a past situation in progress (IPF) or as a finished event in the past (PF) and thus more forms and meaning have to be taken into account to calculate the ratios of the different forms. On the other hand, the most specific forms for describing the past situation, in which the action was terminated, are PF forms, and not progressive forms, which in principle can refer to terminated and non-terminated situations in the past. Thus, in the past situation children are using a less specific

form (IPF) whereas adults are choosing the most informative one (PF). Children's overuse of IPF forms to describe complete situations has also been attested in the acquisition literature for telic predicates: children tend to overuse past IPF morphology with telic verbs to describe complete events, which are usually described by adults with PF morphology (for Russian: Valian, 2006, for Spanish: Vinnitskaya and Wexler, 2001). The overproduction of IPF will be explained further discussed in chapters 6 and 7.

There is another difference between children and adults in the production data: children produced present forms for the past and the future situations, and they also produce sometimes past forms for present and future situations. The use of the present instead of the future is not surprising because the present form can be used prospectively in Spanish as in example (12) and (32):

- (32) Mañana vamos al cine  
*Tomorrow go-pres to the cinema*  
 'Tomorrow we are going to the cinema'

The use of present forms for the past location can also be explained by the influence of the so-called narrative present: narrative uses of present forms as a substitute for past forms as in (33):

- (33) Y entonces Caperucita se encuentra con el lobo y le dice...  
*And then Little Red Riding Hood pron. meet-PRES with the wolf and pron-DAT sayP-PRES...*  
 'And then Little Red Riding Hood comes across the wolf and tells him...'

Additionally, the use of the past morphology for the present situation is not incorrect, since the production query is asked while the character is performing the action in a location and therefore, the character has already been performing the action in the present location for a short amount of time.

In addition, the use of past forms for the future location can be explained by the fact that the *Preterito imperfecto* can be used to refer to present and future locations conveying a counterfactual meaning as in (7) or in (34).

- (34) María bailaba mañana en la fiesta del cole  
*María dance-<sub>PRET. IMP</sub> tomorrow in the party of-the school*  
 'María was going to dance at the school party tomorrow (but she is not any more)'

To sum up, the data presented in this chapter confirms that Spanish children at the age of five have already acquired the semantics of tense: they understand that past, present and future morphology refer to past, present and future situations and they can properly use these morphemes to convey temporal meaning. However, their use of grammatical aspect morphemes is not completely adult-like at this age.

### 3.8. CONCLUSION

The experiment presented here was aimed to test children's understanding and production of past, present and future morphology in a sentence-to-scene matching task and a sentence completion task. With this aim, an experiment was designed so that participants had to distinguish the three temporal distinctions without the reinforcement of completion information in the situation or linguistically by telicity or grammatical aspect, in contrast to other studies (Hollebrandse et al., 2010, Wagner, 2001, Wagner, 2009, 2009, Weist et al., 1991, Weist et al., 1984). Only atelic verbs with IPF morphology were tested. Additionally, the experiment was designed to test possible differences in the use and understanding of synthetic and periphrastic tense forms with a different degree of polysemy.

The results showed that Spanish speaking children at the age of 5 can distinguish the main tense contrasts in the comprehension task and use them properly in production. Children showed adult-like comprehension of both synthetic and periphrastic past, present and future forms, except for the future progressive which was wrongly associated with present situations. In production, periphrastic forms were preferred over synthetic forms in contrast to adults, who seemed to be primed by the kind of form they were tested in comprehension. Children mostly produced progressives for the past and present situation and the prospective periphrasis *ir a + infinitivo* for the future situation in contrast to adults, who reproduced the kind of forms they were tested in comprehension. Children's preference for periphrastic forms is also found for aspect (chapter 6).

Although children's comprehension and production of tense was adult-like in this experiment, there seems to be differences between adults and children at the level of



grammatical aspect: adults produced PF forms to describe past situations while children produced IPFs. This result in the tense experiment will be later on confirmed in the aspect comprehension and production data analyzed in chapters 5 and 6.

The results of this experiment do not provide conclusive data for or against the Informativeness hypothesis (Kazanina and Philips, 2007), according to which forms with a lower degree of polysemy are preferred over more ambiguous forms, mainly because the children were too old and had already acquired tense.



# CHAPTER 4

## THE COMPREHENSION OF IMPERFECTIVE ASPECT IN SPANISH: SEMANTIC COMPLEXITY, DISCOURSE INTEGRATION AND AGENT'S INTENTIONAL CLUES

### 4.1. INTRODUCTION

Studies on the comprehension of grammatical aspect morphology (van Hout, 2005, van Hout, 2007b, 2008, Wagner, 2002) have found that children have difficulties comprehending IPF with telic verbs (4): children tend to relate these predicates only to complete situations even though, in adult grammar, IPF telic verbs can refer both to complete and incomplete events. The non-adult-like comprehension of grammatical aspect has been attributed to difficulties A) at the semantic level: difficulties in applying the semantic shift imposed by IPF (2007, van Hout, 2007a); B) at the discourse level: difficulties in establishing the proper anaphoric temporal reference for the IPF (van Hout, 2007b, van Hout, 2008, 2002) or C) as a reflex of children's dependence on agent-oriented clues (Vet, 2000, Wagner, 2002). The study presented in this chapter tests five year-olds' comprehension of Spanish PF and IPF morphemes in order to check whether there are differences between adults and children in the comprehension of IPF, and, if there are differences, try to determine which of the factors that the literature points out (a-c) are responsible.

This chapter is organized as follows: section 4.2 presents the theoretical background on grammatical aspect. In section 4.3 the main findings in the literature on the acquisition of grammatical aspect are presented. Section 4.4 describes the design of the study, the methodology and materials used in the experiments. Section 4.6 presents the results, which are discussed in section 4.7. Finally, concluding remarks are made in section 4.8.

#### 4.2. THEORETICAL BACKGROUND: PF VS. IPF<sup>33</sup>

The two main distinctions of grammatical aspect, PF and IPF, differ in two respects. First, PF and IPF impose different temporal ordering relations of events in complex sentences<sup>34</sup>: PF typically establishes a sequence of events (85) while IPF yields simultaneity of events (86)<sup>35</sup>(Vet, 2000).

- |     |  |                            |   |  |
|-----|--|----------------------------|---|--|
| (1) | Cuando llegó,<br><i>When arrive</i> <sup>PF</sup><br>'When he arrived, | la niña<br><i>the girl</i> | <b>lloró</b><br><i>cry</i> <sup>PF</sup>    | Pretérito indefinido (PF past)         |
| (2) | Cuando llegó,<br><i>When arrive</i> <sup>PF</sup><br>'When he arrived  | la niña<br><i>the girl</i> | <b>lloraba</b><br><i>cry</i> <sup>IPF</sup> | <i>Pretérito Imperfecto</i> (IPF past) |
|     |  |                            |   | the girl was crying                    |

Simultaneity arises in (2) because IPF is not referentially independent, but establishes an anaphoric relation to another time in the discourse. Under a DRT model of PF and IPF contrasts (Dowty, 1979), PF (1) would have the instruction to introduce a new time referent in an independent file while IPF(2) would have the instruction to access an already opened file to add more information about the time referent active in the discourse. This referential time interval (RefT) can have been made explicit through a temporal modifier or it can be implicit in the discourse.

The other main difference between PF and IPF is that they generate different entailments when combined with telic predicates: telic predicates with PF morphology give rise to a completion entailment (4), whereas IPF telic predicates do not (3) (Dowty, 1979, Kenny, 1963):

- |     |  |                               |   |   |
|-----|--|-------------------------------|---|---|
| (3) | El niño <b>hizo</b><br><i>The girl make</i> <sup>PF</sup><br>'The boy made a puzzle, | un puzle,<br><i>a puzzle,</i> | #pero no lo terminó.<br><i>#but not it finish</i> <sup>PF</sup> | <i>Indefinido</i> (PF past)                       |
|     |  |                               |   | 'The boy made a puzzle, #but he didn't finish it' |

<sup>33</sup> We focus on the progressive meaning of the IPF. The habitual and continuous readings of the IPF are beyond the focus of this chapter.

<sup>34</sup> See section 1.3.1.1 of chapter 1.

<sup>35</sup> The extent of time at which the two time intervals are simultaneous depends on their duration. In the case of example (2), the crying event is longer than the arriving event and thus we interpret that the crying event started before and continues after the arriving event. With a durative Ref time such as *cuando su madre no estaba* 'while her mother was not there' the duration of the two intervals can be interpreted as equal: the crying event is simultaneous to the absence of her mother.

- (4) El niño **hacía** el puzzle, pero no lo terminó. *Imperfecto* (IPF past)  
 The boy *make***IPF** a puzzle, but not it finish**PF**  
 'The boy was making a puzzle, but he didn't finish it'

This pattern is known as the *Imperfective Paradox* (de Swart, 1998, Kenny, 1963, a.o.). According to the Imperfective Paradox, a telic predicate with IPF can refer to an incomplete event but, on the contrary, a telic predicate is typically characterized by its endpoint. Thus, a theory of grammatical aspect has to explain, on the one hand, how IPF aspect excludes the endpoint of a telic event so that it can refer to an incomplete event and, on the other hand, how can an incomplete event be recognized as an instance of the type of event a telic predicate refers to, even though it lacks an endpoint. *Event-based approaches* to grammatical aspect are concerned with the first problem, while *intentional accounts* propose a solution to the second problem. Additionally, these theories also account for the discourse effects of the IPF in (2)<sup>36</sup>.

In *Event-based approaches* (Kamp and Reyle, 1993, de Swart, 1998, de Swart and Verkuyl, 1999) grammatical aspect morphemes involve operators that 'map sets of eventualities (of a certain type) onto sets of eventualities (of some possible other type)' (Kamp and Reyle, 1993: 103), turning a given eventuality into an ongoing state (progressive PROG) or the result-state after the event (Perfect PERF). Additionally, there are tense operators that order the time of the speech *n* with respect to the time referent active in the discourse *t*. These tense operators can be aspectually sensitive: they only take certain kinds of eventualities as input. Such is the case of the French *Imparfait*, similar to the Spanish *Imperfecto* (5), which take homogeneous eventualities *b* as input (states and activities), and the case of the French *Passé Simple*, similar to the Spanish *Indefinido* (6), which take non-homogeneous (telic) predicates *e* as input. When the kind of eventuality does not match the requirements of these aspectually sensitive tenses, a coercion operator is introduced. This coercion operator changes the basic kind of eventuality into an eventuality of another kind that matches with the input of the tense operator. Thus,

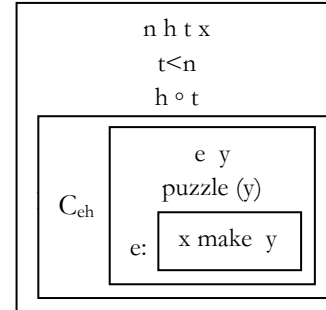
<sup>36</sup>Another approach, the *Interval-based approaches* to grammatical aspect (Borik, 2006, Borik & Reinhart, 2004, Demirdache & Uribe-Etxebarria 2000, 2006, 2007, 2008, Klein 1995, 2008, Smith 1991, a. o.) also solve these problems. These approaches take into account the anaphoric properties of the IPF and define grammatical aspect with respect to different relations between the event denoted by the predicate and the reference time (RefI) that is active in the discourse. See Chapter 1, section 1.3.2.2 for more detail on *Interval-based approaches* versus *Event-based approaches*.

in the case of telic predicates, a coercion operator  $C_{eh}$  is needed to satisfy the non-homogeneous requirement of the IPF *Imperfecto*; for the PF *Indefinido*; on the contrary, no coercion operator is needed and no aspect shift is imposed:

(5) *Imparfait*. Covert coercion operator.

El niño **hacía** un puzzle  
*The boy makeIPF a puzzle*  
 'The boy was making a puzzle'

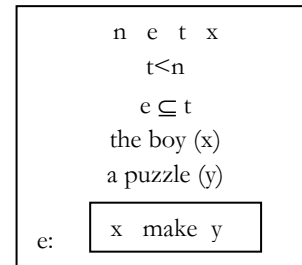
[ PAST [  $C_{eh}$  [ the boy make a puzzle ] ] ]



(6) *Indefinido*. No coercion operator.

El niño **hizo** un puzzle  
*The boy makePF a puzzle*  
 'The boy made a puzzle'

[ PAST [ the boy make a puzzle ] ]



To account for the anaphoric nature of IPF, this approach is related to discourse rules that regulate the introduction of time and event referents in the discourse. Typically, homogeneous event-types (states and activities) establish a simultaneous relation with the referent time active in the discourse  $h \circ e$ : they do not move the narration forward but provide background information. On the contrary, non-homogeneous event-types (telic predicates) generate a sequence of events  $e \subseteq t$  that moves the narration forward (Weist et al., 1991). Consequently, following the discourse rules, a telic PF event-type introduces a new time variable in the narration that is ordered with respect to the time variable that was active in the discourse, generating a sequence of event reading (1) while an IPF predicate introduces an event variable whose time is simultaneous to the time variable in the discourse, providing background information and generating an overlap of events (2).

*Intensional accounts*<sup>37</sup> of IPF (Bennett & Partee, 1972; Dowty, 1979; Landman, 1992, Asher 1992, a.o.) try to explain how can IPF telic predicates, which refer to a part of a telic predicate, be associated to the telic predicate. To account for this fact, they propose that all telic predicates must be associated with a complete event at some level. When marked with PF morphology, completion is reached in the actual world. In the case of IPF, only a subpart of the complete event occurs in the actual world; completion of the event occurs in an *inertia world* that coincides with the actual world up to a point that immediately precedes the event interruption and that is projected upon what was expected of the event in the real world if it had not been interrupted. For example, the predicate *make the puzzle* denotes a successful event of puzzle-making. When marked with IPF (7), it can refer to a complete (7a) or an incomplete event (7b).

- (7) Cuando se cerraron las cortinas, el niño **hacía** un puzzle.  
*When PRON closePF the curtains, the boy makeIPF un puzzle*  
 'When the curtains closed, the boy was making a puzzle'
- a) Aunque nadie estuviera mirando, terminó de hacerlo.  
 'Although nobody was watching, he finished doing it'
- b) Como nadie le estaba mirando, dejó de hacerlo.  
 'As nobody was watching him, he stopped doing it'

In (7a) the puzzle is completed in the actual world. In (7b) the use of IPF in the first clause is licensed because the boy would have had the intention to finish the puzzle and would eventually have finished it if somebody had been watching; in this case, the IPF telic predicate refers to an event that did not reach completion because the speaker projects an inertia world where the event reached completion.

The part of the event during which the real world and the inertia world overlap should be understood not as a mere temporal stage but as a 'natural part', with particular properties. Some conditions have to hold for the event to continue in the inertia world. One such condition is that the agent has to have the intention to complete the event (Asher, 1992). For example, in a scenario where a boy is sorting

<sup>37</sup>These approaches are called *intensional* as opposed to *extensional approaches* (Bennet&Partee, 1972) that define the semantics of the IPF as: PROG(p) is true if the event *e* described by PROG(p) is part of an event *e'* described by *p*.

the pieces of a puzzle, (7) can be uttered only if the boy has the intention to make the puzzle and not just to sort the pieces. If someone is in the middle of making a puzzle and takes a pause, one way to know if the puzzle will be left unfinished or will be continued is to know that person's intentions. Therefore, under this view, the agent's intentional state is part of the meaning of the IPF.

Event-based and intensional approaches have different implications for language acquisition. On the one hand, the acquisition of IPF under event-based approaches, requires mastery at two different levels of information: at the level of semantics, children have to be able to apply the aspect shift or coercion to telic predicates imposed by the IPF; at the level of the discourse, children have to properly link the time of the event to an antecedent in the discourse. On the other hand, intentional theories of the IPF propose that, to correctly describe incomplete events with telic predicates, speakers have to project inertia worlds in which completion is reached. The mastery of the IPF requires children to infer the agent's intention to finish the event. Therefore, intentional properties of the agent are crucial for the acquisition of IPF aspect.

### **4.3. GRAMMATICAL ASPECT IN CHILD LANGUAGE**

There is no agreement on whether grammatical aspect morphemes are comprehended adult-like at the early ages. Although most of the studies agree that children distinguish PF and IPF aspect, not all the results show an adult-like mastery of PF and IPF. Weist and his colleagues (Stoll, 1998, Weist et al., 1997) showed that English and Polish 2;6 to 6;6 year-old children can correctly link PF and IPF sentences to pictures depicting complete and ongoing actions respectively. Their experiment involved a forced-choice sentence-to-picture matching task where children were presented with two alternative pictures and two alternative sentences. Children more often chose the complete picture for PF and the ongoing picture for IPF. Similar results were found in Russian by Stoll (2001). In her study, two videos were shown simultaneously on a split screen showing complete and incomplete situations. The children's task was to point out which video corresponded to a PF



sentence<sup>38</sup>. The results showed that accuracy increased with age, but it was already significantly above chance at the age of 3 with a rate of 75% target responses. Vinnitskaya & Wexler (2005) also found adult-like comprehension of PF and IPF. They analyzed 3;5 to 6;5 year-old Russian children's comprehension of grammatical aspect in a picture-selection task where children were asked to associate transitive and intransitive telic predicates with PF and IPF morphology to pictures depicting complete and ongoing actions. Their results showed 90% of accuracy at all ages.

In contrast to these results, van Hout (2001, 2007a, 2007b, 2008) and Hollebrandse and van Hout (2008) found that 3, 4 and 5 year-old Italian, Polish and Dutch<sup>39</sup> children did not comprehend grammatical aspect fully adult-like. They tested children in a picture-selection task in which children were asked to relate PF and IPF predicates uttered in a narrative context to pictures depicting complete, incomplete and ongoing versions of an event (see more details of the task in section 4.5). The Polish and Dutch children behaved differently with PF and IPF marking, showing that they were aware of the grammatical aspect contrast. Yet, their performance with IPF aspect was not adult-like: while adults tended to choose only ongoing actions for IPF and only complete actions for PF, children chose the complete situation for both PF and IPF aspect almost equally often. Italian children did not perform above chance with IPF and PF, though this result with Italian can be due to some methodological differences when testing Italian children<sup>40</sup>.

Two different explanations of these data have been provided. First, children's non-adult-like behaviour of IPF telic predicates has been interpreted in terms of difficulties of applying the aspect shift and coercion imposed by the IPF

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<sup>38</sup> In this study Stoll tested various kinds of predicates. Here only the results on "telic actions" are reported. These correspond to PF transitive incremental theme predicates. IPF predicates have not been tested in her study.

<sup>39</sup> Forms used were: Imperfect Past (*Onvoltooid Verleden Tijd*) and Present Perfect (*Voltooid Tegenwoordige Tijd*) and Imperfect for Dutch; Imperfect Past (*Imperfetto*) and Present Perfect (*Passato Prossimo*) for Italian, and Imperfective Past (*Czas Przeszły Niedokonany*) and Perfective Past (*Czas Przeszły Dokonany*) for Polish.

<sup>40</sup> The predicates were different, and also the procedure: for Dutch and Polish children. Only one form was tested in each of the sessions; in contrast, in Italian items of both tenses were mixed and tested in one session.

morphology to convert a telic predicates into an atelic ones because aspect coercion is more costly to process (van Hout, 2005, van Hout, 2007b). Thus, children's difficulties in interpreting IPF aspect are located at the semantic level<sup>41</sup>.

In Van Hout (2007) another type of explanation is proposed. Children's misunderstanding of IPF aspect is related to a discourse deficit: a failure to identify the relevant antecedent time in the discourse to the IPF. There are three possible variants of this explanation, namely: i) Children do not apply any discourse rules in the semantics-pragmatics interface because they lack such an interface. Instead they order events according to what seems plausible, given the kind of the event or the knowledge of the world (what typically happens in a story world). Thus, they would choose the complete picture and not the ongoing one because telic predicates have endpoints and events typically finish in a story world. ii) Children apply discourse rules that are different from adults' rules: they do not know that imperfective aspect triggers overlap of events and perfective aspect a sequence of events. For PF they would choose complete pictures because PF telic predicates entail completion; for IPF their linking would be free or underdetermined, accepting any of the situations because their semantics and their discourse rules do not provide a basis for relating IPF to ongoingness. iii) Children cannot properly recognize the active narrative reference time because there are so many possible times in the story. During the narrative, various events are presented that move the narration forwards and backwards (the beginning of the story, the closing of the curtains, the puppet looking behind and the puppet uttering the sentence). Differences between adults and children may arise because that they are tricked by the complicated story line that requires them to move back to the time of the puppet looking behind the curtains to correctly interpret the IPF.

Kazanina & Philips (2007) also found that Russian 3-4 year-olds do not perform adult-like with IPF in a sentence-to-scene matching task (experiments 1 and 2). In this task, an action was acted out in front of the child by a puppet that followed a

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<sup>41</sup>This hypothesis has also been modelled in the framework of Optimality Theory and bidirectional reasoning (van Hout, 2007a).

road and stopped in three locations: one where the action was completed, one where the action had started but was left incomplete; and one where the action did not even start. Children had to point out the location that corresponded to sentences with PF and IPF forms. Whereas adults tended to link PF to the complete location and IPF to both the complete and the incomplete situation, some children only chose the complete situation for the IPF. However, the pattern changed in two extra experiments that were carried out with the same children. In these experiments two simultaneous events were acted out (e.g. a boy watering plants and a girl cleaning the table). One of these events was used to establish the RefT with an explicit *while* clause (e.g. *while the boy was watering the plants*); the other event was shown as either completed or incomplete. Children had to judge whether sentences with PF or IPF were suitable to describe these situations:

- (8) Poka malchik polival cvety, devochka **vytirala** stol  
*While boy water.past.IPF flowers, girl clean.past.IPF table*  
 'While the boy was watering the flowers, the girl was cleaning the table'
- (9) Poka malchik polival cvety, devochka **vyterla** stol  
*While boy water.past.IPF flowers, girl clean.past.IPF table*  
 'While the boy was watering the flowers, the girl cleaned the table'

[From Kazanina & Phillips (2002: 85)]

Children's responses in the latter two experiments were adult-like, including the children who were not adult-like in the first two experiments: they accepted IPF for incomplete events, as adults did. These results have been explained by the presence of an explicit RefT in the experimental setting. Children's success with IPF in experiments 3 & 4 was related to the fact that in these tasks, the RefT was explicit in the discourse: the *while* clause in examples (8) and (9). On the contrary, in the first two experiments the RefT was not explicit in the discourse. In these tasks, the authors argue that children assumed a different RefT than adults: for children the RefT coincides with the whole discourse-established reference frame where completion was achieved while for adults, the RefT could also be any temporal interval within the discourse-established reference frame.

Wagner (1984) also found non-adult like patterns of understanding of grammatical aspect by English learners. Children were tested in a forced-choice sentence-to-

scene matching task similar to Weist et al.'s (1984) task where they had to relate PF and IPF sentences to complete and incomplete events. Instead of using pictures, children were presented with pairs of toys depicting different versions of the event (a completely filled puzzle or a partially filled puzzle). Wagner's results showed that children's understanding of grammatical aspect morphemes<sup>42</sup> was not adult-like until the age of 5, and even at the age of 5, children tended to relate IPF to complete events. These results were interpreted in relation to the intentions of the agent. In her scenes, only the complete or incomplete object was shown, with no agent, as opposed to Weist et al.'s (2007a) task. Wagner claimed that children could not compute grammatical aspect if they can only rely on information about the object. Successful performance of IPF depends on the availability of information about the agent's intentions.

To sum up, three different explanations have been given to account for the findings in studies that show that IPF aspect is not comprehended adult-like: A) an incomplete comprehension of the interaction of IPF aspect and the lexical properties of the predicates and, more specifically, problems with aspect shift and coercion (Kazanina and Philips, 2007); B) difficulties with the anaphoricity of IPF (van Hout, 2008, Wagner, 2002) and C) a dependence on clues about the agent's intentions to interpret IPF (van Hout, 2008).

#### 4.4. RESEARCH QUESTIONS

The study presented here investigates 5-year-old's comprehension of Spanish PF and IPF past forms with two main purposes: (i) check whether children have target-like understanding of the two forms and, if Spanish children have a non-adult-like comprehension of IPF telic predicates as found in the literature, (ii) determine whether children's non-adult-like comprehension of IPF is related to A) difficulties in coercing the telic predicate into an homogeneous predicate, as imposed by the semantics of IPF, B) a non-adult-like understanding of the anaphoric properties of IPF forms in a discourse or C) whether children's comprehension of IPF is dependent on the agent-oriented property of intentionality. Van Hout's (2002)

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<sup>42</sup> She tested children with the simple past tense and the progressive.

picture-selection task was adapted to Spanish with a new variable: the set-up of the experiment by introducing the PF and the IPF forms either in a narrative or in an out-of-the-blue setting. The two different settings and the contrast between ongoing, complete and incomplete situations in the pictures make it possible to distinguish between the three possible factors explaining the differences between adults and children sketched above (A, B, and C).

The predictions are as following: a) if non-adult-like interpretation of IPF morphology is related to difficulties in combining imperfectivity and telicity, we expected to find the same pattern of responses in the two experimental settings. b) If non-adult-like interpretation of IPF is related to discourse integration but not semantics, we expect to find problems with IPF morphology only in the narrative setting, but not in the out-of-the-blue setting.

In relation to the dependence on clues about the agent's intentions, the aim was to test whether agent-oriented properties of the event (clues about the intentions) have a priority over object-oriented properties (completion). Children were tested on their capacity to link PF and IPF telic predicates to pictures showing an event in three possible scenarios: complete situation, incomplete situation and ongoing situation<sup>43</sup>. These pictures differed on whether the object was portrayed as complete or incomplete, and whether the agent was portrayed as involved in the action or not. Complete pictures showed object completion, but no agent participation; ongoing pictures showed agent-participation and no completion; and incomplete pictures showed no agent-participation and no completion. Additionally, the agent's intentions were conveyed in the narrative setting, whereas no reference to agent's intentions was stated in the out-of-the-blue setting (see section 4.5.2., examples (10)-(12)). The predictions are as follows: if for children the agent-oriented clue of intentionality is more prominent than the object-oriented clue of lack of

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<sup>43</sup> Previous studies had tested some of these situations, but not the three of them: Wagner (2002) contrasted complete vs. incomplete situations; Weist et al. (1991) only tested complete vs. ongoing situations (they called the ongoing picture 'incomplete', but in the example of the pictures they used the action is what in this experiment would be called 'ongoing', because they show the agent involved in the action); Kazanina & Phillips (2007) used acted-out situations showing complete and incomplete events, but videos are not directly comparable with static pictures or endstates, because before completion and incompleteness they show the process ongoing.

completion, as proposed by Wagner (1992), ongoing pictures are expected to be preferred for the IPF over complete and incomplete pictures because the agent is only engaged in ongoing situations. Moreover, more accurate responses for the IPF are expected in the narrative setting than in the out-of-the-blue setting given that the narrative states the agent's intentions. If, on the contrary, lack of completion has a priority over intentionality clues, both ongoing and incomplete pictures are expected to be selected both in the narrative and in the out-of-the-blue setting because in those pictures the object is not yet finished.

## 4.5. THE STUDY

### 4.5.1. Design

Van Hout's (2002, 2005, 2007) methodology was adapted to Spanish. The experiment consisted of a picture selection task in which participants had to link sentences containing a telic predicate marked with either PF (*Indefinido*) or IPF (*Imperfecto*) morphology with pictures showing an event in three possible stages: complete situations, incomplete situations and ongoing situations. For each test sentence, children had a choice between two pictures:

- C-O condition: complete vs. ongoing situation.
- C-I condition: complete vs. incomplete situation.
- O-I condition: ongoing vs. incomplete situation.

Therefore, the experimental design had two within-subjects variables: the aspect morphology (*Aspect*) on the test sentence –PF vs. IPF–; and the different pairs (*Condition*)–C-O, C-I and O-I conditions–. The dependent variable was the participant's response, which varies depending on the contrasting pair.

A new variable was added to the original design: the experimental setting: a) the test sentence was given in a narrative context (10), or b) test sentence was given out-of-the-blue (12).

The age of the subject (*Age group*)—adult vs. children and the experimental setting (*Setting*)—narrative context vs. out-of-the-blue— were between-subjects variables.

#### 4.5.2. Procedure and materials

In the narrative setting a book was given to the child with lots of pictures, some of which had become detached. Each of the pages told a story and involved four pictures. The first picture portrayed the beginning of the story, as introduced in the narrative. The second picture showed two closed curtains. The closure of the curtains interrupted the narration. At this point, a puppet intervened: it looked behind the curtains, and told the participant what happened by uttering the test sentence:

##### (10) NARRATIVE CONTEXT SETTING

En esta historia había un niño que cumplía años. Le regalaron un puzle muy bonito, pero que era muy difícil de hacer. Lo abrió y empezó a hacerlo, pero se cerraron las cortinas y no podemos nada más. Mascota, mira detrás de las cortinas, ¿qué pasaba/pasó?

*“In this tale it was this boy’s birthday. Somebody gave him a really nice puzzle as a present, though it was a difficult puzzle to make. He opened it and started making it. But the curtains closed and we cannot see any more. Puppet, look behind the pictures! What was happening/ happened?”*

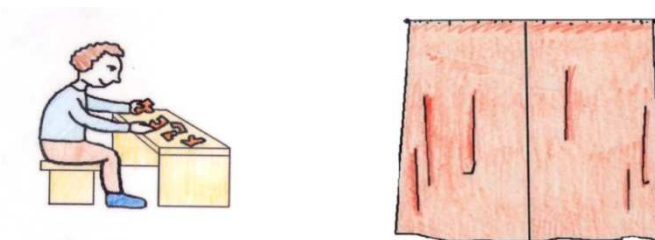


Figure 4.1: First two pictures of a narrative item

##### (11) TEST SENTENCE:

“El niño **hacía**IMP/**hizo**PF el puzle.”

“The boy was making /made the puzzle”

Then, two pictures were shown (Figure 4.2). The task of the participant was see if the right picture was there to complete the page.

In the out-of-the-blue setting there was also a book with pictures. This book did not show the pictures in Figure 4.1, it only contained the pictures in Figure 4.2. The participant was told that the book showed things that had happened yesterday, but they were mixed up with pictures of things that did not happen. The puppet knew what had happened. So, for each pair of pictures, we asked the puppet "what happened here?" and the puppet uttered the test sentence:

(12) TEST SENTENCE:

“El niño **hacía**IMP/**hizo**PF el puzle.”

“The boy was making /made the puzzle”

After hearing the test sentence, children had to see if the right picture was there and, if so, choose among the two pictures.



Figure 4.2: Pictures representing three possible stages of a situation: ongoing, complete and incomplete.

In the ongoing picture, the agent was engaged in the action, in contrast to the complete and incomplete situations, where the agent was present but was not engaged in the action. Complete situations presented the agent in front of a finished project; incomplete situations, in contrast, presented the agent in the foreground next to an unfinished project. These pictures were presented in pairs: complete & ongoing (C-O condition), complete & incomplete (C-I condition) and ongoing & incomplete (O-I condition). In principle, there were three possible answers: choosing one of the pictures –picture A or picture B–, or rejecting both of them. Choosing both pictures was also a possible answer, but this kind of answer was never the target nor was it trained.

Notice that the test sentence of the narrative-context experimental setting and the out-of-the-blue setting are exactly the same. In the narrative setting the introduction



and curtains pictures were shown to the participants together with the story preceding the test sentence; in the out-of-the-blue context only the picture pair was given.

The test was administered in two sessions, one for PF aspect and the other for IPF aspect. There were two sets of pictures, one for each session. As the two sets of materials contained different pictures, in order to control for a possible artifact, subjects were divided into two groups: one started with PF morphology in the first session, and continued with IPF morphology in the second session and the other group did the inverse order: they started with IPF morphology and their second session was devoted to PF aspect. In addition to this, two different lists randomizing the order of items were created to control for possible interactions in the order of items. The position of the target picture was also counterbalanced left and right to avoid bias.

In each of the sessions nine items were tested, three for each contrasting pair. There were also three distracters in each session. The distracters had a double function: first, they were used as control items, indicating that the participant was focused and could perform a picture-selection task; second, they were designed to trigger the 'neither' answer, balancing the number of 'neither' answers in order to avoid a bias towards always choosing a picture. Additionally, the first session included a training in which the participant was introduced to the task and to the different kinds of possible responses (the selection of picture A or picture B, and the rejection to select any of pictures, the 'neither' response). The training had three items. As the time between the sessions was short (between two and five days), no training was given for the second session.

The forms used for this experiment were the past synthetic forms of *pretérito indefinido* and *pretérito imperfecto*.

- (13) a. El niño      hizo              un puzzle              PF *pretérito indefinido*  
           *The boy*        *make-PF*            *a puzzle*  
           ‘The boy made a puzzle’

- b. El niño hacía un puzzle IPF *pretérito imperfecto*  
*The boy make-IPF a puzzle*  
 'The boy was making a flower'

Telic transitive predicates were used. In the narrative task the event takes some time to develop behind the curtains, so the predicates had to have duration. Therefore, the items were mostly accomplishments of two different classes: incremental theme predicates and change of state predicates. Table 4.1 lists the predicates used in each of the conditions and in each of the sessions:

	C-O condition	C-I condition	O-I condition
SESSION 1	Hacer el puzzle <i>Make the puzzle</i>	Dibujar el tigre <i>Draw the tiger</i>	Construir el castillo <i>Build the castle</i>
	Lavar al perro <i>Clean the dog</i>	Cortarle la coleta a la niña <i>Cut off the pony tail (to the girl)</i>	Comer(se) una zanahoria <i>Eat up the carrot</i>
	Atarse el zapato <i>Tie up the shoe</i>	Doblar el papel <i>Fold the paper</i>	Recortar el círculo <i>Cut out the circle</i>
SESSION 2	Leer el libro <i>Read the book</i>	Construir la torre <i>Build the tower</i>	Hacer un niño de plastilina <i>Make a boy out of clay</i>
	Escribir la carta <i>Write the letter</i>	Dibujar la flor <i>Draw the flower.</i>	Borrar el dibujo <i>Delete the circle</i>
	Comerse la sardina <i>Eat up the sardine</i>	Cerrarse la chaqueta. <i>Tie up the jacket</i>	Descolgar la toalla <i>Take the tower off (the line)</i>

Table 4.1: List of predicates of the test items

### 4.5.3. Participants

25 five-year old children were tested of whom 23 (range <5;4, 6;3>, mean age 5;11) were included in the analysis<sup>44</sup>. All children attended a public school in Villaverde Alto, a neighbourhood of middle-low socio-economic class in the south of Madrid. The children were tested individually at their school where Spanish is the vehicular language.

<sup>44</sup> One child did not participate in both of the sessions, so his data was incomplete. The other child provided non-target answers in the training and most of the control items, showing that he was not focused on the task.

The control group was formed by 16 adults. All of them have university degrees and their L1 is Spanish, though some of them were competent bilinguals in additional languages such as Basque or Catalan. They came from different areas: Madrid (eight), Navarra and the Basque Country (seven) and Cataluña (one).

The distribution of subjects across settings and sessions was as follows:

	1 <sup>RST</sup> SESSION	2 <sup>ND</sup> SESSION
NARRATIVE 11 children 8 adults	Perfective 5 children; 4 adults	> Imperfective
	Imperfective 6 children; 4 adults	> Perfective
OUT-OF-THE-BLUE 12 children 8 adults	Perfective 6 children; 4 adults	> Imperfective
	Imperfective 6 children; 4 adults	> Perfective

Table 4.2: Distribution of subjects on the different experimental conditions

## 4.6. RESULTS

### 4.6.1. Coding

The answers were coded in two different ways: 1) the picture chosen, which characterizes the kind of response, and 2) as whether or not the response corresponded to the expected response. This second coding enabled us to perform analyses to compare the accuracy in the performance of adults and children. Expected responses were as follows:

	PERFECTIVE	IMPERFECTIVE
C-O condition	Complete	Ongoing
C-I condition	Complete	None
O-I condition	None	Ongoing

Table 4.3: Expected responses for all conditions

Selection of the complete situation was expected for PF aspect, because PF telic predicates entail completion. For IPF, the expected answer was the ongoing situation because in the narrative setting the use of IPF means that the action is

ongoing at the time the puppet looked behind the curtains and in the out-of-the-blue situation the use of the IPF implies that there is no certainty that the event was completed. Pictures portraying an incomplete situation were expected to be rejected both for PF –because of the completion entailments– and for IPF, because these pictures do not depict the agent's intention, and intentionality has been claimed to be part of the meaning of IPF (Wagner, 2002) and a decisive clue for children to understand IPF (Kazanina and Philips, 2007).

#### 4.6.2. Results

Figure 4.3 shows the results for the kind of responses provided by adults and children for IPF and PF collapsing the two experimental settings:

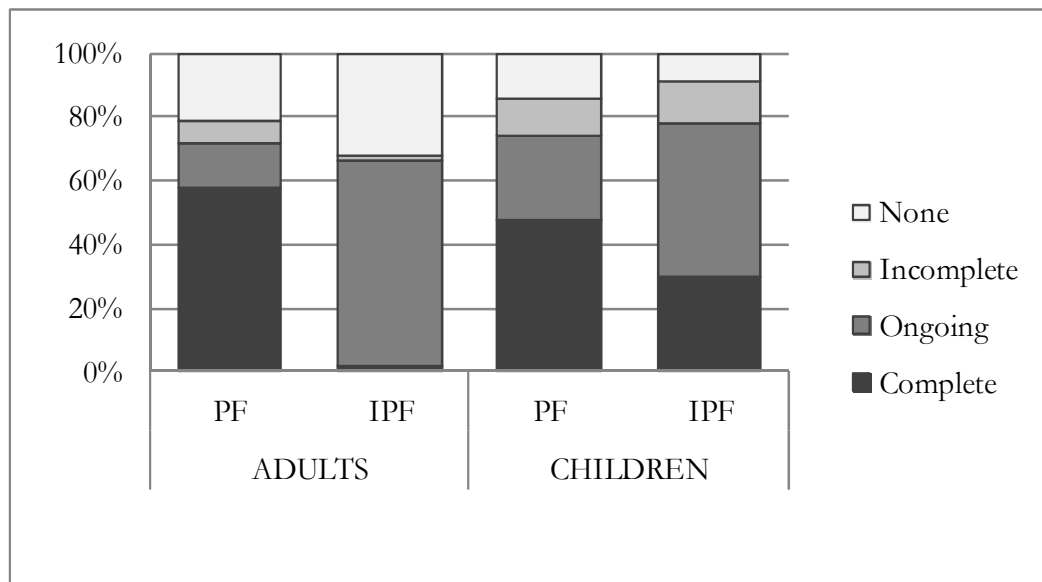


Figure 4.3: Rates of responses by aspect marking and age group across all pairs and across both experimental settings

As shown in Figure 4.3, adults show a clear pattern of responses for PF and IPF aspect whereas children's responses are more variable. Adults tended to choose the complete picture for PF and the incomplete picture for IPF. Additionally, they gave a 'none' response in the cases where neither of the pictures was correct. These cases were one third of the possible items (33%). In contrast, children tended to choose the complete picture for PF but also sometimes the ongoing picture; for IPF, they chose both the complete and the ongoing picture. Additionally, they did not give the

'none' answer as often as the adults and they sometimes chose the incomplete picture which was a rare choice in the adult data.

Figure 4.4 shows the percentages of expected responses (see Table 4.1) of adults and children in the narrative and the out-of-the-blue settings. The means (out of 9 items) and the standard deviations are presented in Table 4.4.

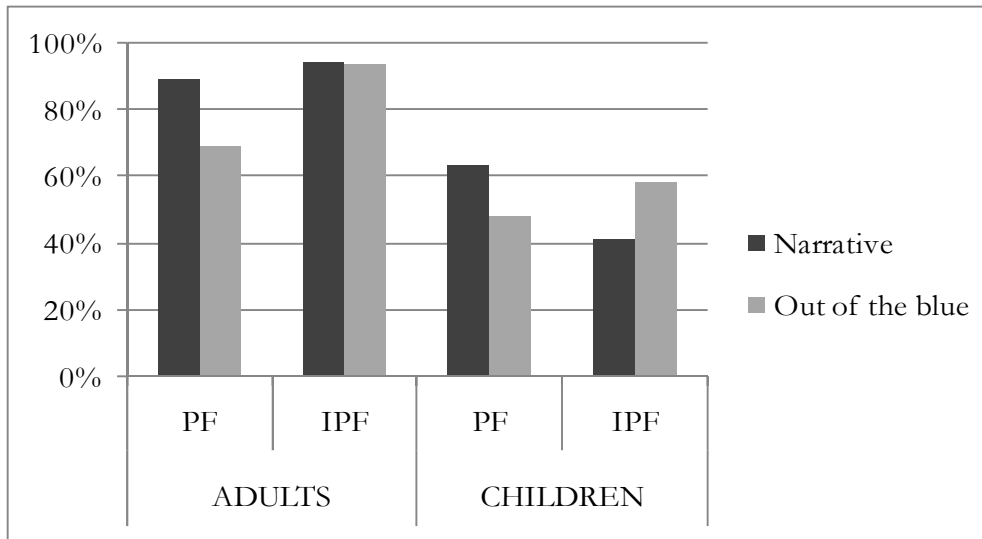


Figure 4.4: Percentage of expected responses per age group and experimental setting

		NARRATIVE		OUT-OF-THE-BLUE	
		Mean	SD	Mean	SD
ADULTS	PF	8.00	.756	6.44	1.810
	IPF	8.50	.535	8.44	1.014
CHILDREN	PF	5.67	1.414	4.31	1.653
	IPF	3.44	1.130	5.08	1.038

Table 4.4: Means and standard deviations of expected responses for both age groups and settings

In order to analyze if amount of expected responses provided (see Figure 4.4) was different from chance, chance level was established at 33% because subjects had been trained on three possible responses (choosing a picture –pic. A or pic. B– or

none of them)<sup>45</sup>. T-tests revealed that subjects performed significantly above chance in the narrative setting for PF (adults:  $t=11.708$ ;  $p<.001$ ; children:  $t=5.657$ ;  $p<.001$ ) and in the out-of-the-blue setting (adults:  $t=5.708$ ;  $p<.001$ ; children:  $t=2.853$ ;  $p<.05$ ). For IPF all subjects performed significantly above chance in the out-of-the-blue setting (adults:  $t=16.111$ ;  $p<.001$ ; children:  $t=7.216$ ;  $p<.001$ ) but only adults performed above chance in the narrative setting ( $t=29.103$ ;  $p<.001$ ); conversely, children's rate of expected answers for the IPF in the narrative setting did not differ from chance ( $t= 1.180$ ,  $p>0.1$ ).

Additional analyses on the amount of expected responses for PF and IPF<sup>46</sup> revealed that the differences between age groups in the amount of expected responses were significant both for the PF ( $\chi^2= 13.534$ ;  $p<.01$ ) and for IPF aspect ( $\chi^2= 28.192$ ;  $p<.01$ ). Adults provided more expected responses (see Table 4.3) both for PF and for IPF. The experimental setting was also significant. For PF, means of expected responses were higher in the narrative setting than in the out-of-the-blue setting and this difference was significant in the adult data ( $\chi^2= 3.930$ ;  $p<.05$ ) and at trend level in the child data ( $\chi^2= 3.636$ ;  $p=.057$ ). For the IPF, differences between the two settings were only found in children data ( $\chi^2= 8.765$ ,  $p<.05$ ): children provided more expected responses in the out-of-the-blue setting than in the narrative setting.

There were also differences in performance across picture pair conditions both for adults ( $\chi^2= 10.711$ ;  $p<.05$ ) and for children ( $\chi^2= 26.907$ ;  $p<.05$ ). Figure 4.5 and Figure 4.6 show the kind of picture chosen across age groups and condition for PF and IPF:

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<sup>45</sup> Chance level in van Hout (2008) was calculated at 50% though in principle four responses were possible: choosing picture 1, choosing picture 2, not choosing any of the picture or choosing both of the pictures. However, given that children were trained in three different kinds of responses (choosing picture A, choosing picture B or neither of them), we thought that the chance level should be established at 33%.

<sup>46</sup> As explained in section 4.5.2, in order to control for possible effects of the order of items (set 1 vs. set 2) and the set of materials used in each of the sessions (PF>IPF vs. IPF>PF) subjects were divided into several groups with respect to these characteristics. Statistical analysis reveals that there is no influence of these variables. Neither set (for PF: children  $\chi^2=2.968$ ,  $p>.05$  and adults  $\chi^2=.629$ ,  $p>.05$ ; for IPF: children  $\chi^2=.696$ ,  $p>.05$  and adults  $\chi^2=.629$ ,  $p>.05$ ), nor differences between the two orders of aspect forms in the two sessions were significant (for PF: children  $\chi^2=.287$ ,  $p>.05$  and adults  $\chi^2=$ ,  $p>$ ; for IPF: children  $\chi^2=.001$ ,  $p>.05$  and adults  $\chi^2=.993$ ,  $p>.05$ ).

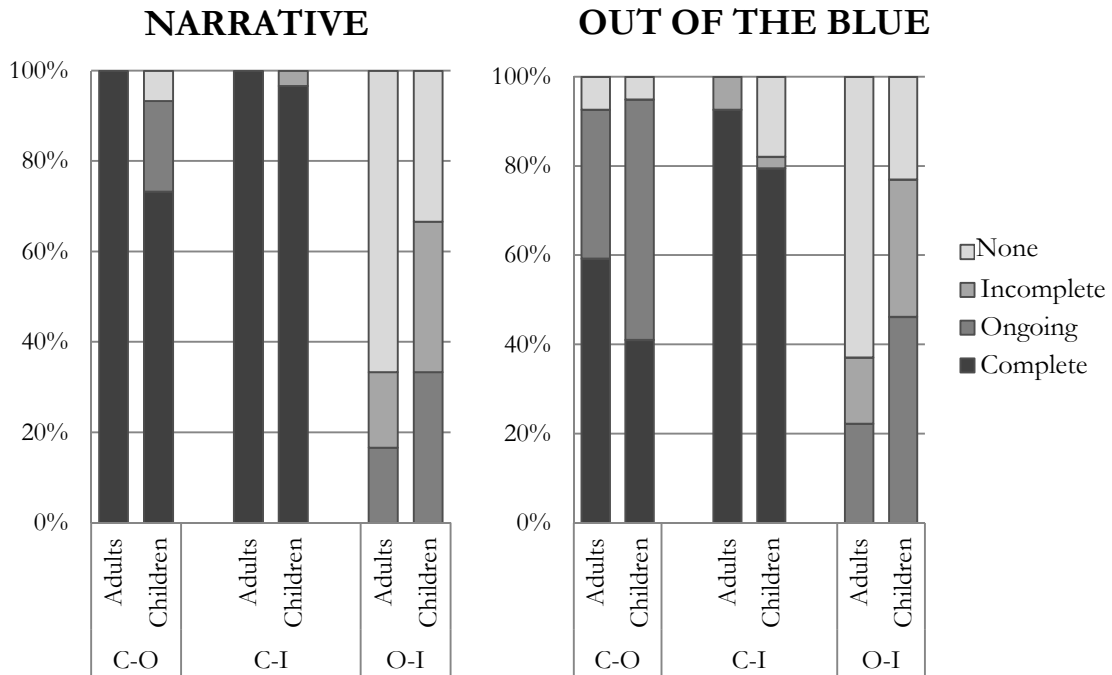


Figure 4.5: Picture selected for PERFECTIVE in each condition.

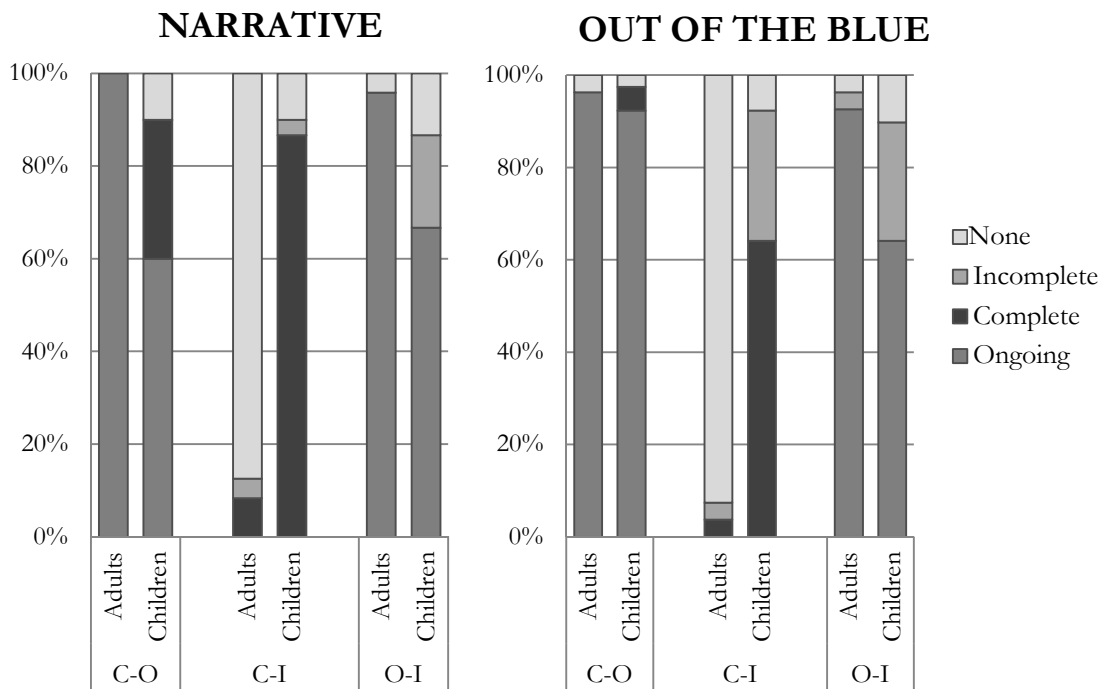


Figure 4.6: Picture selected for IMPERFECTIVE in each condition.

Figure 4.5 and Figure 4.6 give more information about the main findings of the experiment though statistical analyses of significance cannot be performed over these data. These findings are:

First, children tended to avoid the 'neither' answer (Figure 4.3). As we can see in Figure 4.5, for PF they tended to choose ongoing and incomplete situations in the OI condition, not showing a preference for one or the other; for IPF, they mostly chose the complete situation in the CI condition, especially in the narrative context, as we can see in Figure 4.6.

Second, there is a difference among settings in the responses for PF (Figure 4.4). As we can see in Figure 4.5, adults tended to choose the ongoing picture in addition to the complete picture in the out-of-the-blue setting in the CO condition; children's showed the same tendency to choose ongoing pictures for PF in the CO condition in the out-of-the-blue specially, though they also chose ongoing pictures in the narrative setting.

Third, there were differences between the narrative and the out-of-the-blue settings in children's performance for IPF (Figure 4.3). As Figure 4.6 shows, children choose less often than adults the 'ongoing' response for IPF, especially in the CO condition in the narrative setting

Finally, children tend to choose sometimes the incomplete picture both for PF and for IPF (Figure 4.3). They do so in both settings, as Figure 4.5 and Figure 4.6 show.

#### **4.7. DISCUSSION**

The aim of this study was to investigate whether Spanish learners have adult-like understanding of PF and IPF aspect. Moreover, if non-adult-like comprehension of telic IPF predicates were found, we intended to find out if the differences between adults and children were related a) at the semantic level, to difficulties with aspectual coercion b) difficulties at the discourse level in the integration of the anaphoric properties of the IPF or c) to children's dependence on clues about the agent's intentions to interpret IPF.

As expected, adults tended to choose the complete picture for the PF (or neither when the complete picture was not an option) and the ongoing picture for the IPF (or neither when the ongoing picture was not an option). However, responses for



the PF where different depending on the setting: in the out-of-the-blue situation adults chose the ongoing picture along with the complete picture whereas in the narrative context situation they chose only the complete picture.

Children's rates of expected answers were lower than adults' on both PF and IPF. Children performed above chance both for PF in both settings and for IPF in the narrative setting. The patterns of responses for the PF and the IPF were different, showing that children can distinguish the two grammatical aspect markers in line with (van Hout, 2005, 2007a, 2007b, 2008, Vinnitskaya and Wexler, 2001, Weist et al., 1984, Weist et al., 1997, a. o). Still, their comprehension was not adult-like, especially with the IPF: children mostly chose the ongoing picture, but they also chose sometimes the complete and incomplete pictures.

Two different experimental settings were included in order to see whether children's non adult-like performance with the IPF was related to a) difficulties at the semantic level –in imposing the aspect shift of the IPF that coerces a telic predicate into an homogeneous predicate– as proposed by van Hout (2007a, 2007b, 2008), or b) to difficulties at the discourse level –in understanding the anaphoric properties of IPF– as proposed by van Hout (2005). If non-adult-like interpretation of IPF morphology was related to difficulties in combining imperfectivity and telicity, we expected to find the same pattern of responses in the two experimental settings; if non-adult-like interpretation of IPF was related to discourse integration but not semantics, we expected to find problems with IPF morphology only in the narrative setting, but not in the out-of-the-blue setting. The results show that there is indeed dissociation between the narrative context versus the out-of-the-blue setting in the comprehension of IPF: children's performance is more similar to adults' in the out-of-the-blue setting than in the narrative setting. In fact, children's rates of expected responses for the IPF in the narrative context situation were not significantly above chance, but they were above chance in the out-of-the-blue situation. The difference between the settings is especially visible in the CO condition, where children chose both complete and ongoing pictures in the narrative context setting (ongoing 60%, complete 30%), while they chose mostly ongoing pictures in the out-of-the-blue

setting (ongoing 92%). The difference among the two experimental settings in the comprehension of IPF is only found in the children's data and hence stands as a qualitative difference between adults and children. The fact that children's performance was above chance with the IPF aspect in the out-of-the-blue setting suggests that children know the basic semantics of IPF and can apply the aspect shift imposed on telic predicates when they are combined with IPF aspect, at least in the out-of-the-blue setting. So our results do not support van Hout's (2007a, 2007b, 2008) hypothesis that the semantic complexity of the combination of IPF with telic verbs is the cause of the delay of acquisition with IPF. Note that our study extends the original study by van Hout (2007a, 2007b, 2008) adding the variation in the experimental setting, which is what enables us to draw new conclusions on the acquisition of IPF. The fact that the accuracy of children's responses in the out-of-the-blue setting was higher than in the narrative context setting suggests that children have difficulties in correctly integrating IPF in the discourse, supporting an explanation based on an immature development of the discourse rules that regulate the temporal ordering effects of the different forms in the discourse (Kazanina and Philips, 2007). Three possibilities have been suggested by van Hout: i) children do not apply any discourse rules but they order events in according to what seems plausible; ii) children apply discourse rules that are different from adults' rules: they do not know that IPF triggers overlap of events and PF a sequence of events and iii) children cannot properly determine the narrative reference time because there are too many possible reference times at which to interpret the test sentence. Our data does not support hypotheses i) and ii) because they should apply equally to both settings. The third line of explanation in iii) offers an insight that is compatible with our data. In the narrative setting there are various possible reference times to validate the IPF: the time of the closure of the curtains, the time at which the puppet looked behind the pictures and the time at which the puppet spoke. In the out-of-the-blue setting, the only relevant RefT was the deictic and punctual past referring 'here' in the 'what was happening here?' question preceding the test sentence (12). Thus, it may be the case that in the narrative setting children were assuming a different reference time from adults with which to establish the simultaneity relation, whereas in the out-of-the-blue context they could not, since

there was only one relevant time available. This latter explanation goes in line with the explanation of Kazanina & Philips (2002). These authors proposed that whenever the reference time of the IPF was not explicitly given in the discourse, children assumed a different referent time for the IPF from adults, which is indeed compatible with our data.

Additionally, this experiment aimed to discover whether agent-oriented properties of the event (clues about the agent's intentions) were preferred over object-oriented properties (completion) in children's comprehension of grammatical aspect IPF, as claimed by Wagner (2005). For this purpose, two different states of the agent were depicted in the pictures: the agent involved in the action in the ongoing picture and the agent present but not involved in the action, as in the complete and incomplete pictures (see Figure 4.2). Moreover, there was an explicit statement of the agent's intentions in the narrative setting only. If children relied on agent-oriented (intentionality) clues over object-oriented clues (completion) for establishing the meaning of ongoingness, we did not expect children to choose complete and incomplete pictures, especially in the out-of-the-blue setting, since intentionality was not conveyed by those pictures. Moreover, performance should have been more adult-like in the narrative setting than in the out-of-the-blue setting, since intentionality is stated in the narrative but not in the out-of-the-blue setting. Our results do not support Wagner's (2002) hypothesis that the availability of information about the agent's intentions facilitates children's understanding of IPF because children, unlike adults, chose sometimes the incomplete picture both in the narrative and in the out-of-the-blue setting. Furthermore, they also tended to choose the complete picture in the CI condition in both settings (87% in the narrative and 64% in the out-of-the-blue) and sometimes (30%) in the CO condition in the narrative setting.

However, the intentions of the agent and the importance of having seen the agent engaged in the action may have been a factor affecting children' and adults' understanding of PF in this task. In the out-of-the-blue setting, but not in the narrative context setting, both adults and children linked occasionally PF to the

ongoing picture instead of the complete picture, especially for the CO condition. This may be because in the ongoing picture the agent is portrayed engaged in the action while in complete pictures she is not, and thus these complete pictures do not guarantee the participation of the agent in the action<sup>47</sup>: the presence of the agent does not imply agentivity. In the narrative setting, both adults and children chose the complete picture because in the narrative setting the story established the agent role of the character with a picture depicting the beginning of the action with the agent engaged in the action<sup>48</sup>.

Finally, some methodological remarks can be made on the basis of the results of this experiment. First, children are reluctant to provide a 'none' answer when they have to make a choice between two pictures; therefore, no such conditions should be included in an experimental design. Given that this condition is one third of the testing items, the lower rates of expected responses in this condition have had an effect in the overall performance on the task both for the PF and the IPF. Second, pictures lack a dynamic component which is crucial for ensuring the agent's implication in the action; therefore the use of sequences of pictures or videos is more adequate for studying grammatical aspect. Finally, given that our experiment

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<sup>47</sup> The idea comes from the feedback that adults gave after finishing the task and being asked why they chose the ongoing picture in this situation.

<sup>48</sup> However, if the lack of assessment of the participation of the agent in the action would lead subjects to choose ongoing pictures instead of complete pictures, we should have also expected subjects to relate PF to the ongoing pictures in the OI situation, because incomplete pictures do not guarantee the participation of the agent in the event either; but participants did not choose the incomplete picture in the OI situation. There is another plausible explanation for subjects' different responses for PF in the CO condition: the differences in the nature of the implicit reference time of the narrative and the out-of-the-blue setting. While the reference time in the narrative setting is durative (the RefT is all the time the curtains were closed up to the moment when the puppet looks behind the curtains), in the out-of-the-blue situation, the implicit reference time has a punctual moment in the past equivalent to the locative expression *here* in the question 'what happened here?' preceding the test sentence. The fact that the RefT in the out-of-the-blue situation may be interpreted as some specific punctual moment in the past has another consequence for the interpretation of PF: it may be interpreted inchoatively and not progressively, as follows:

- (v) En ese momento, el niño hizo.PF el puzle.  
*In that moment, the boy started to make the puzzle.*
- (vi) Mientras las cortinas estaban cerradas, el niño hizo.PF el puzle.  
*While the curtains were closed, the boy made the puzzle.*

shows that children's understanding of IPF depends on the experimental setting and to difficulties in identifying the proper antecedent for the IPF, the kind of RefT in the task has to be taken into account and manipulated carefully when testing the comprehension of grammatical aspect<sup>49</sup>.

#### 4.8. CONCLUSION

This chapter has presented a study on children's comprehension of grammatical aspect aimed to check if 5 year-old Spanish learners have target-like understanding of simple PF (*Indefinido*) and IPF (*Imperfecto*) forms. A picture-selection task based on van Hout (2007a, 2007b, 2008, 2002) was adapted to Spanish with two different settings: a narrative setting and an out-of-the-blue setting. We found lower rates of expected responses for IPF, and tried to determine which of these factors proposed in the literature are the cause of the difficulties, namely i) the semantic complexity of the aspect shift imposed on telic predicates by the IPF; ii) the difficulty of correctly applying the anaphoric linking of the IPF in the discourse or iii) children's dependency on the agent-oriented property of intentionality to compute the IPF.

The results show that 5 year-old children appropriately distinguish PF and IPF morphology, as they tended to link PF marker to complete events and the IPF to ongoing events. Additionally, their performance with IPF was above chance in the out-of-the-blue situation, which shows that children know the semantics of IPF and they can apply the aspectual shift imposed by IPF, in contrast to what is proposed by van Hout (2007a, 2007b, 2008). Additionally, no effect of children's dependency on clues about the agent's intentions was found in the experiment, contra Wagner (2009). Children's accuracy with the IPF was not above chance in the narrative setting, which suggests that children's problems in understanding IPF are related to the anaphoric linking of the IPF in the discourse.

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<sup>49</sup>These problems are controlled for in the ASPECT MOVIES EXPERIMENT presented in chapters 5, 6 and 7.



# **CHAPTER 5**

## **COMPREHENSION OF GRAMMATICAL ASPECT IN SPANISH: DISENTANGLING THE IMPERFECTIVE PARADOX**

### **5.1. INTRODUCTION**

In this chapter, children and adult comprehension data of PF and IPF are analyzed in order to evaluate five-year-olds' knowledge of the interaction of grammatical aspect and predicational aspect in Spanish and the rising or cancelation of completion entailments described by the Imperfective Paradox. Two different kinds of forms are studied –synthetic and periphrastic forms– with two different kinds of telic predicates –change of state and incremental theme predicates– in order to tease apart the two different levels of aspect and test if A) the different morphological forms of grammatical aspect and B) the different kinds of telic predicates influence children's understanding of the Imperfective Paradox.

The section is organized as follows. Sections 5.2 and 5.3 present the different forms and predicates that are tested in this study. Section 5.4 presents a brief review of previous studies on the comprehension of grammatical and predicational aspect in child language. The research questions and predictions are presented in section 5.5. The experiment is explained in section 5.6 and results are presented in section 5.7. These results are discussed in section 5.8. Some concluding remarks are made in section 5.9.

## 5.2. GRAMMATICAL ASPECT FORMS IN SPANISH

Spanish has a very rich tense and grammatical aspect system, with three different temporal values (past, present and future), two different morphological configurations (synthetic and periphrastic) and two different aspectual values (perfective and imperfective tenses). In this study we will focus only on four past forms (two for PF and two for IPF):

(1) Pretérito Indefinido (*Indefinido*)

El payaso	<b>dibuj-ó</b>	una flor
<i>The clown</i>	<i>draw-PF.past3s</i>	<i>a flower</i>
‘The clown drew a flower’		

(2) Pretérito Imperfecto (*Imperfecto*)

El payaso	dibuj- <b>a-ba</b>	una flor
<i>The clown</i>	<i>draw-TV-IPF.past3s</i>	<i>a flower</i>
‘The clown was drawing a flower’		

(3) Pretérito perfecto (*Perfecto*)

El payaso	<b>ha</b>	<b>dibuja-do</b>	una flor
<i>The clown</i>	<i>HAVEpres3s</i>	<i>draw-PF</i>	<i>a flower</i>
‘The clown has drawn a flower’			

(4) Perífrasis progresiva (*Progresivo*)

El payaso	<b>est-aba</b>	<b>dibuja-ndo</b>	una flor
<i>The clown</i>	<i>BE-pastIPF3s</i>	<i>draw-IPF</i>	<i>a flower</i>
‘The clown was drawing a flower’			

Depending on their morphological configuration, these four forms can be grouped in two groups: synthetic forms and periphrastic forms. The forms of *indefinido* (1) and the *imperfecto* (2) are synthetic. In these forms, mood, tense and aspect marking are encoded by an accumulative morpheme. The forms of *perfecto* (3) and *progresivo* (4) are periphrastic. In these forms the meaning is built upon the aspectual properties of the auxiliary and the verbal form. The auxiliary bears morphological marking for person, number, tense, aspect and mood and always precedes the lexical verbal form, that comes as a participle and bears the aspectual marking. In the case of *perfecto* (3), the auxiliary *haber* ‘to have’ precedes the lexical verb for marked with the past participle with *-do* ending. The *progresivo* contains the auxiliary *estar* ‘to remain, to stay, to be’ preceding the gerund, also called present participle, which is marked with *-ndo* (RAE 1979: 518-521).



Depending on their aspectual value, these forms are paired in two different groups: perfective PF and imperfective IPF forms. According to the so-called *Imperfective Paradox* (Comrie, 1976, Kenny, 1963, a.o.), PF forms give rise to a completion entailment when combined with telic predicates, while IPF forms do not. PF forms in (5) entail that the event was completed and a drawing of a flower came into existence and therefore they cannot be followed by a sentence that cancels completion; on the contrary, IPF forms in (6) do not entail that the event was completed and therefore, they can be followed by a sentence that cancels completion:

(5) PF forms:

- a. El payaso dibujó una flor #pero no la terminó<sup>50</sup>  
*The clown draw\_indefinito a flower ·but neg. it finish\_indefinito*  
 ‘The clown drew a flower, # but he didn’t finish it’
- b. El payaso ha dibujado una flor #pero no la ha terminado  
*The clown draw\_perfecto a flower ··but neg. it finish\_perfecto*  
 ‘The clown has drawn a flower, # but he hasn’t finished it’

(6) IPF forms:

- a. El payaso dibujaba una flor pero no la terminó  
*The clown draw\_imperfecto a flower ··but neg. it finish\_indefinito*  
 ‘The clown drew a flower, but he didn’t finish it’
- b. El payaso estaba dibujando una flor pero no la terminó  
*The clown draw\_progressive a flower but neg. it finish\_indefinito*  
 ‘The clown was drawing a flower, but he didn’t finish it’

Although the two subsets of forms behave alike with respect to the raising or cancelation of completion entailments, there are subtle differences in their meanings. On the one hand, Spanish *indefinito* is a past form that can be combined freely with any past time denoting modifier (7a), while the Spanish *perfecto* is incompatible with temporal modifiers denoting a specific past time, as in example (7b).

- (7) a. El payaso dibujó una flor ayer/hace tres horas.  
 ‘The clown drew-*indefinito* the flower yesterday/three hours ago’

<sup>50</sup>Symbol \* is used for grammar violations; symbol # is used for violations of semantic wellformedness.

- b. El payaso ha dibujado una flor\*ayer/hace tres horas.  
 ‘The clown has-drawn-*perfecto*the flower \*yesterday/three hours ago’

Additionally, the *perfecto*, unlike the *indefinido*, has a meaning of “present or current relevance”, which makes this form infelicitous when referring to non-current relevant situations:

- (8) Velázquez #ha pintado / pintó Las Meninas  
*Velázquez paint\_perfecto/paint\_indefinido Las Meninas*  
 ‘Velázquez #has painted/painted Las Meninas’

Similarly, the two IPF forms also have different meanings: *progresivo* is unambiguous and conveys only progressive meaning -the meaning that the action is ongoing-, while *imperfecto* is ambiguous and conveys progressive (4), habitual (5) and continuous (6) meanings (Ramchand, 2008: p. 25).

- (9) El payaso dibujaba una flor(en ese momento)  
*The clown draw\_imperfecto a flower(in that moment)*  
 ‘The clown was drawing a flower in that moment’
- (10) El payaso dibujaba todos los días  
*The clown draw\_imperfecto everyday*  
 ‘The clown used to draw everyday’
- (11) El payaso dibujaba muy bien  
*The clown draw\_imperfecto very well*  
 ‘The clown drew very well, knew how to draw well’

As a summary, Spanish *pretérito perfecto*, *pretérito indefinido*, *pretérito imperfecto* and *perífrasis progresiva* can be classified into different groups in relation to (A) whether they raise completion entailments with telic predicates (PF) or not (IPF); (B) whether they are synthetic or periphrastic and (C) whether they are unambiguous or ambiguous.

	<i>Indefinido</i>	<i>Perfecto</i>	<i>Progresivo</i>	<i>Imperfecto</i>
COMPLETION ENTAILMENTS WITH TELIC PREDICATES	PF (Yes)		IPF (No)	
MORPHOLOGY	Synthetic	Periphrastic		Synthetic
MEANING	Unambiguous			Ambiguous

Table 5.1: Distribution of the four Spanish forms depending on the three criteria: completion entailments, morphology and meaning.

### 5.3. TWO KINDS OF TELIC PREDICATES

Ramchand (1999) proposes that the meaning of events can be uniformly decomposed into a set of syntactic and semantic categories that, in different combinations, generate all the different kinds of eventualities (activities, accomplishments, causative predicates, etc)<sup>51</sup>. These syntactic and semantic categories correspond to three subevents in which an event can be decomposed (and three corresponding syntactic phrases): a causing subevent, syntactically encoded by InitP; a process subevent, syntactically encoded by ProcP and a result subevent, syntactically encoded by ResP. Telicity under this analysis can be derived in two different ways. On the one hand, telicity can be derived by the existence of a Result Phrase (ResP), as in the case of change of state predicates (12). The result subevent denotes the final outcome of the event, the end state derived from the change of state, which sets a bound to the event that entails telicity.

- (12) El payaso apagó la vela  
*'The clown blew out the candle'*  
 Process = blowing; Result = the fire is out.

Different languages lexicalize these subevents in different ways. For example, in (12), the Spanish verb 'apagar' lexicalizes the meaning of the process and the result; while in English the verb 'to blow' lexicalizes the process and the particle 'out' refers to the result state. Same happens with other particle verbs such as 'eat up', 'cut out', etc.

In the absence of a result subevent, telicity can be derived from the boundedness of complement of the process event, which can either be the affected object in an incremental theme predicate (13), or a prepositional phrase complementing in a motion verb (14). Both kinds of complements, the affected object and the prepositional phrase, are called Paths. If the Path is bounded or delimited<sup>52</sup>, the

<sup>51</sup> For more details on Ramchand's First Phase Syntax model, see section 1.2.2.2 of Chapter 1 and Ramchand (2008).

<sup>52</sup> A DP Path is bounded if it has a non-homogeneous reference such as a singular or count term; a Path is unbounded if it has a homogenous reference such a mass noun or a bareplural (Ramchand, 2008: 22). A PrepP Path is bounded if it has a cumulative reference; it is unbounded if it is not cumulative. (Ramchand, 2008: 100)

predicate is interpreted as telic (13a)/ (14a). If the path is unbounded, the predicate is interpreted as atelic (13b)/ (14b):

- |      |  |        |
|------|--|--------|
| (13) | a. El payaso dibujó una estrella<br>‘The clown drew a star’                  | TELIC  |
|      | b. El payaso dibujó estrellas<br>‘The clown drew stars’                      | ATELIC |
| (14) | a. El payaso corrió hasta su casa<br>‘The clown run to his house’            | TELIC  |
|      | b. El payaso corrió alrededor de su casa<br>‘The clown run around his house’ | ATELIC |

Ramchand, following Hay et al. (2007), proposes that telicity with bounded paths is not semantically entailed as with a ResP, but, instead, it is generated by the quantity implicature that the reported event was ‘complete’. This implicature can be cancelled by modification with a *for adverbial* (15a) or by explicit denial with *but not completely* (15b)<sup>53</sup>:

- |      |   |
|------|---|
| (15) | a. El payaso dibujó una estrella durante una hora<br>‘The clown drew a star for an hour’          |
|      | b. El payaso dibujó una estrella, pero no del todo<br>‘The clown drew a star, but not completely’ |

However, when a measure phrase is added to the object, telicity is not pragmatically implied, but it is semantically derived from the boundedness of the measure phrase:

- |      |  |
|------|--|
| (16) | El payaso dibujó dos picos de la estrella, #pero no del todo<br>‘The clown drew two points of a star, #but not completely’ |
|------|--|

Similarly, when the telicity of the predicates depends on the existence of a result state (a ResP) it is semantically derived and thus it cannot be cancelled:

- |      |  |
|------|--|
| (17) | El payaso apagó la vela, #pero no del todo<br>‘The clown blew out the candle, #but not completely’ |
|------|--|

As a summary, change of state and incremental theme predicates differ in the way they generate telicity. On the one hand, telicity in change of state predicates is semantically derived by the existence of a result subevent that sets its endpoint. On the other hand, telicity in incremental theme predicates is derived from the

<sup>53</sup>In examples (13) and (15)-(17), Ramchand’s (2008) and Hay et al.’s (1999) discussion is adapted to the two kinds of predicates used in the experiment presented in this chapter.

boundedness of the theme through a quantity implicature that establishes that the whole path was affected and thus the event was completed.

Given that the Imperfective Paradox is defined in relation to telicity, in principle, no difference in the rise or cancelation of completion entailments is expected with respect to the distinction between change of state predicates and incremental theme predicates:

(18) PF: completion entailments (*indefinido/perfecto*):

- |    |   |                    |                 |   |                   |
|----|---|--------------------|-----------------|---|-------------------|
| a. | El payaso                                   | dibujó/ha dibujado | una flor        | → | A drawing of the  |
|    | <i>The clown</i>                            | <i>draw_PF</i>     | <i>a flower</i> |   | flower came into  |
|    | 'The clown drew/has drawn a flower'         |                    |                 |   | existence         |
|    |   |                    |                 |   |                   |
| b. | El payaso                                   | apagó /ha apagado  | la vela         | → | The candle is not |
|    | <i>The clown</i>                            | <i>blowout_IPF</i> | <i>a candle</i> |   | lit               |
|    | 'The clown blew out/has blown out a candle' |                    |                 |   |                   |

(19) IPF: no completion entailments (*imperfecto/progresivo*):

- |    |                                      |                           |                 |     |                    |
|----|--------------------------------------|---------------------------|-----------------|-----|--------------------|
| a. | El payaso                            | dibujaba/estaba dibujando | una flor        | -/→ | The drawing of the |
|    | <i>The clown</i>                     | <i>draw_IPF</i>           | <i>a flower</i> |     | flower came into   |
|    | 'The clown was drawing a flower'     |                           |                 |     | existence          |
|    |                                      |                           |                 |     |                    |
| b. | El payaso                            | apagaba /estaba apagando  | la vela         | -/→ | The candle is not  |
|    | <i>The clown</i>                     | <i>blowout_IPF</i>        | <i>a candle</i> |     | lit                |
|    | 'The clown was blowing out a candle' |                           |                 |     |                    |

#### 5.4. GRAMMATICAL ASPECT IN CHILD LANGUAGE

To correctly comprehend the Imperfective Paradox, children must master knowledge at the two levels of aspect.: at the level of grammatical aspect they have to be aware of the distinction between PF and IPF forms; at the level of predicational aspect, they must be able to derive the telicity of the predicate, either if it depends on the boundedness of the object or if it is generated by the existence of a result event.

Experiments on the comprehension of grammatical aspect and predicational aspect have shown that children can distinguish the two basic levels of aspectual information –predicational aspect and grammatical aspect – and that they understand the basic notions conveyed by each of these categories (van Hout, 2008,

Vinnitskaya and Wexler, 2001, Wagner, 2009, Weist et al., 1984). However, certain studies have identified some factors that may be interfering in the comprehension of the interaction between grammatical and predicational aspect.

With respect to grammatical aspect, comprehension studies have shown that IPF telic predicates are more difficult to understand than PF telic predicates, albeit not in all the studies. Studies on Slavic languages (Kazanina and Philips, 2007, van Hout, 2005, Weist et al., 1984, experiments 3 & 4) conclude that children below 3 behave adult-like in the comprehension of grammatical aspect. In contrast, differences between adults and children have been reported by van Hout (2007, 2008) and Kazanina & Philips (1996, experiments 3 & 4), who found that children, even though children are aware of the completion entailments of PF telic predicates, unlike adults they tend to link IPF marking to completed events in Italian, Dutch, Polish and Russian. This result has been linked, among other factors<sup>54</sup>, to crosslinguistic differences in the morphological configuration of grammatical aspect in the different languages. In fact, not all languages encode T&A in the same way. Some languages establish more transparent relations between form and meaning (one-to-one relations) than other languages and this might facilitate acquisition. In fact, as proposed by Slobin's (1973) with his Operating Principle of Unifunctionality (20), the relative complexity of the morphosyntactic configurations of T&A in language has been claimed to be a reliable influence on linguistic development.

(20) Operating Principle of Unifunctionality(Andersen, 1984: 1228):

If you discover that a linguistic form expresses two closely related but distinguishable Notions, use available means in your language to distinctly mark the two Notions.

For tense and aspect this principle has been claimed to be active in the interlanguage in L2 acquisition (van Hout, 2008) and it has been applied to child language comprehension (van Hout et al., 2010a, Weist et al., 1991). Weist, Wysocka & Lyytinen (2008) found differences in the comprehension of grammatical aspect between English, Polish and Finnish: PF/IPF aspectual contrasts were acquired

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<sup>54</sup>For more factors explaining the differences between adults and children in the comprehension of grammatical aspect go to section 2.3.2 of chapter 2.

earlier when the distinction relied on verb morphology, as in English and Polish, than when it relied on the case of be object, as in Finnish. Other studies have confirmed crosslinguistic differences in the comprehension of grammatical aspect. Van Hout(1998) found that Dutch and Polish aspectual morphemes were comprehended more adult-like than Italian morphemes. The crosslinguistic differences in children's comprehension were related to morphological salience, to how aspect is encoded in this languages: the Dutch and Polish aspect stands out morphologically as prefixes on the left of the verb stem, and separated from tense and agreement morphology which sits on the right of the verb stem, in contrast to Italian, where aspect, tense, and agreement morphology all appear on the same side of the verb.

With respect to predicational aspect, comprehension studies have shown that in Dutch and English children have more difficulties to compute telicity when it depends on the object, that when it depends on particles (Kazanina and Philips, 2007). In Ramchand's (2008) terms, this would mean that children have more difficulties to compute as telic those predicates whose telicity depends on the boundedness of the Path than predicates whose telicity depends on the existence of a Result Phrase. However, Kazanina& Philips (2008) found no differences between change of state predicates and incremental theme predicates in children's generation of completion entailments in Russian.

As a summary, in order to understand the raising and cancelation of completion entailments of telic predicates when combined with PF and IPF morphology respectively, children have to attain mastery at the two levels of aspect: grammatical aspect and predicational aspect. At the level of grammatical aspect, some studies (van Hout, 1998) have pointed out that children have difficulties in cancelling the completion entailments of the IPF and this has been related to crosslinguistic differences in the morphological forms. At the level of predicational aspect difficulties assessing telicity when in depends of the object have been found by van Hout (1973). These two levels of aspect will be disentangled in the present study.

### 5.5. RESEARCH QUESTIONS AND HYPOTHESES

The present study<sup>55</sup> examines 5-year-old children's comprehension of PF and IPF morphology with telic predicates referring to complete and incomplete events. The main goal of the experiment is to check what knowledge do five year old children have about the interaction of grammatical aspect and predicational aspect and the raising and cancelation of completion entailments patterns of the Imperfective Paradox. For that, the two levels of aspect are teased apart, looking in detail at A) different grammatical aspect forms (*perfecto*, *indefinido*, *imperfecto* and *progresivo*) and B) different kinds of telic predicates (change of state and incremental theme predicates).

With respect to the kind of form, if children are aware of the Imperfective Paradox, given that PF forms give rise to a completion entailment, we expect participants to accept *perfecto* and *indefinido* for complete events and reject them for incomplete events in comprehension. For the IPF forms, which do not give rise to completion entailments, we expect participants to accept both *progresivo* and *imperfecto* for complete and incomplete events in comprehension.

However, according to the Operating Principle of Unifunctionality (Ramchand, 2008) in (20) we expect differences between adults and children depending on the forms (*indefinido*, *perfecto*, *imperfecto* and *progresivo*). On the one hand, taking into account the morphosyntactic distribution of tense and aspect in the different forms, this hypothesis would predict that periphrastic forms are acquired earlier than synthetic forms because they establish a one-to-one mapping relation: in periphrastic forms, there is an aspectual morpheme that has only aspectual meaning (the suffix in the participle) –one morpheme-one meaning– (3)/(4), while in synthetic forms, aspectual meaning is always conflated with tense meaning in an accumulative morpheme that encodes both tense and aspect meanings –one morpheme-multiple meanings– (1)/(2). On the other hand, looking at the kind of meanings of these different forms, unambiguous forms should be acquired earlier

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<sup>55</sup> The design was developed within the project COST A33 Crosslinguistically Robust Stages of Children's Linguistic Performance. The present experiment was adapted to 14 languages by the Tense and Aspect group lead by Angeliek van Hout (van Hout et al., 2010).



than ambiguous ones. In the case of Spanish, this would predict that periphrastic forms such as the *perfecto*, *indefinido* and *progresivo* should be acquired earlier than Spanish synthetic *imperfecto*, as the latter carries more than one meaning: progressive, habitual and continuous. Therefore, the two implications of the one-to-one mapping hypothesis are the following:

- (21) Predictions of the one-to-one hypothesis with respect to the transparency of morphosyntactic configuration.
- a. One meaning → one form      PREDICTION: periphrastic > synthetic
  - b. One form → one meaning      PREDICTION: *perfecto, indefinido, progresivo* > *imperfecto*

With respect to the telicity of the predicate, given that A) telicity in change of state predicates is derived semantically through a ResP, while in incremental theme predicates is derived pragmatically through a quantity implicature that establishes that the whole bounded Path is affected by the process (van Hout, 1998) and B) given that the acquisition literature has reported that children have more difficulties to assess telicity when it depends on the object –as in the case of incremental theme predicates– than when it depends on particles –comparable to what happens with change of state predicates– (Kazanina and Philips, 2007), we raise the following hypothesis and predictions:

- (22) Semantically driven telicity (raised by the existence of a result state) is easier to assess by children than pragmatically driven telicity (dependent on the boundedness of the object).
- PREDICTION: Raising of completion entailments:  
change of state > incremental theme predicate

According to the hypothesis in (22), we expect children to have difficulties to identify incremental theme predicates as telic and, therefore, will not reject the PF for incomplete situations with incremental theme but they will with change of state predicates.

## 5.6. THE STUDY

### 5.6.1. Task

To test the comprehension of PF and IPF a truth-value judgment test (Crain and McKee, 1985) was designed in order to explore whether children are aware of the

rise or cancelation of completion entailments with telic predicates. In this task, participants had to evaluate the acceptability of telic predicates combined with PF and IPF morphology when referring to complete and incomplete events. Acceptance (YES answer) was expected for telic predicates marked with IPF morphology, when referred to complete or incomplete events. Acceptance was also expected for PF marked predicates when referring to a completed event. In contrast, rejection (NO answer) was expected for PF marked telic predicates referring to an incomplete event (see table Table 5.2). There was also a production task associated to this experiment, whose results will be presented in Chapter 6

### 5.6.2. Design and materials

The truth value judgment task and the production task were based on six short video films. In each of them a clown had to perform an action with six different objects while background music was playing. 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)

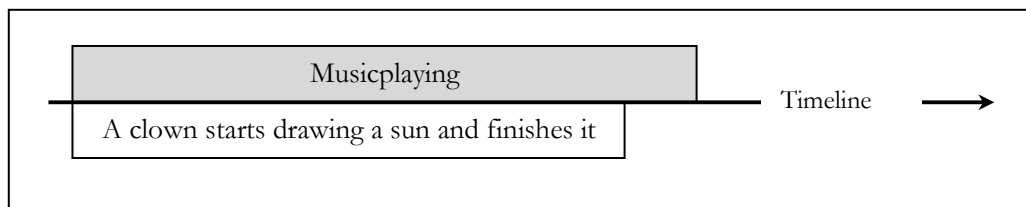


Figure 5.1: Schema of the COMPLETE situation (2 items per video for comprehension and 1 for production)

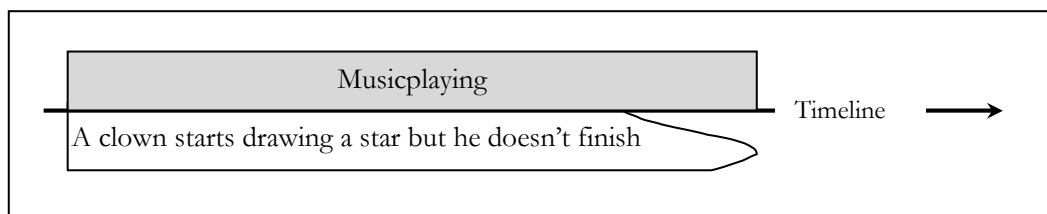


Figure 5.2: Schema of the INCOMPLETE situation (2 items per video for comprehension and 1 for production)



Figure 5.3: Example of the final picture (when de music stops)

For the comprehension experiment, after showing the short film 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 participant's task was to accept or reject the question:

- (23) *Puppet:* Mientras sonaba la música ...  
*While play*<sub>IMPERFECTO</sub> *the music...*  
 'While the music was playing...'  
 a. ¿El payaso dibujó /ha dibujado una estrella? PF  
*The clown draw*<sub>INDEFINIDO</sub> / *has drawn*<sub>PERFECTO</sub> *a star*  
 'Did the clown draw/has the clown drawn a star?'  
 b. ¿El payaso dibujaba /estaba dibujando una estrella? IPF  
*The clown draw*<sub>IMPERFECTO</sub> / *was drawing*<sub>PROGRESIVO</sub> *a star*  
 'Was the clown drawing a star?'

*Participant:* YES or NO

The task for the subject was to judge whether the sentence was describing correctly the situation in the film or not. For each verb, two instances of a complete situation and two of an incomplete situation were shown, each one related to a PF or to an IPF predicate. Therefore, four conditions were designed, for which the expected answers were the following:

SITUATION	GRAMMATICAL ASPECT	CONDITION	EXPECTED ANSWER
Complete	PF	ComP	Yes
	IPF	ComI	Yes
Incomplete	PF	IncP	No
	IPF	IncI	Yes

Table 5.2: Expected answers in all the experimental conditions.

Previous acquisition studies (Dowty, 1979) have attested that having 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 event of playing music in the experiment, so it could work to delimit a temporal frame to be used as the temporal interval of reference for evaluating the imperfective. In the protocol, the temporal interval of reference was made linguistically explicit by a ‘while’ clause. This ‘while’ clause contained an IPF form (‘while the music *was* playing’), that was the synthetic *imperfecto* when testing periphrastic forms, and the progressive periphrasis when testing synthetic forms.

Six verbs were tested. The verbs belong to two lexical (sub)classes of predicates: *incremental theme predicates* (24) and *change of state predicates* (25):

## (24) Incremental theme predicates:

*Construir* ‘to build’  
*Hacer*, ‘to make’  
*Dibujar* ‘to draw’

## (25) Change of state predicates:

*Abrir* ‘to open’  
*Cerrar* ‘to close’  
*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, as shown in Figure 5.4, the four first events were used as comprehension test queries –

one for each of the four testing conditions in Table 5.3– and the last two events were used as production test queries.

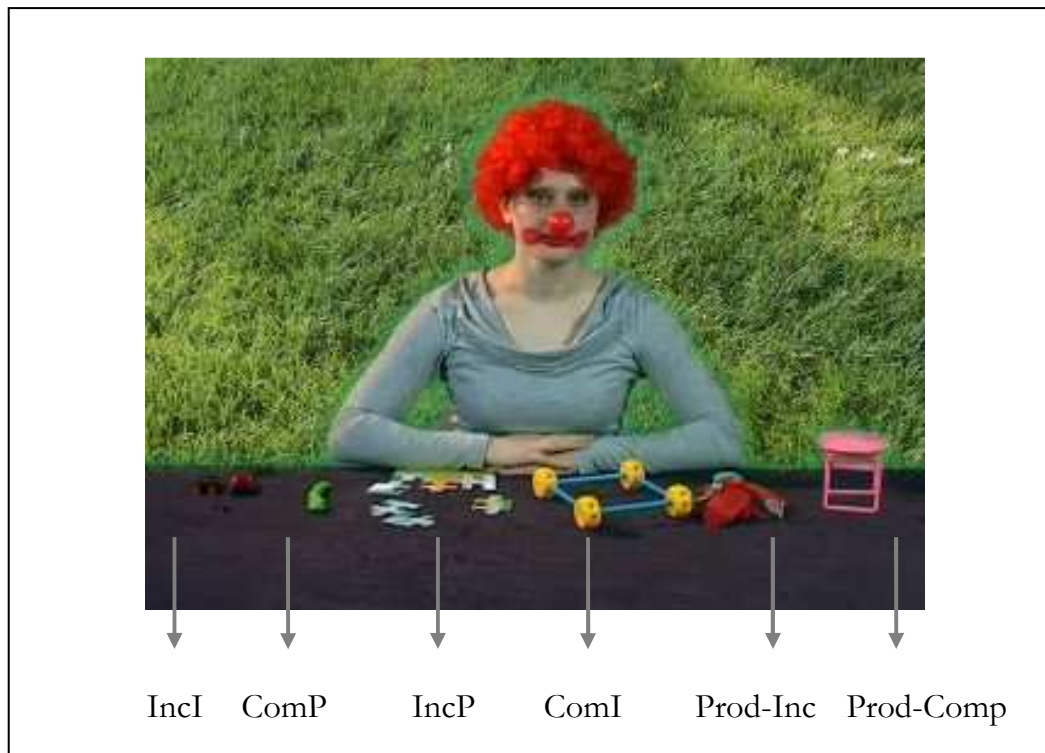


Figure 5.4: Example of the ordering of items in the ‘make’ video

Therefore, there were 24 items for comprehension and 12 for production. Additionally, control and distracters were introduced in the experiment before each of the testing sentences. These fillers and distracters were questions about objects on the video.

Two different sets of morphological forms representing the opposition between PF and IPF aspect marking were chosen:

(26) Spanish synthetic forms: *indefinido* vs. *imperfecto*

- |    |  |                                   |
|----|--|-----------------------------------|
| a. | El payaso dibujó una flor<br><i>The clown draw-3sPFpast a flower</i><br>‘The clown drew a flower’            | <i>Indefinido</i> . Synthetic PF  |
| b. | El payaso dibujaba una flor<br><i>The clown draw-IPFpast3s a flower.</i><br>‘The clown was drawing a flower’ | <i>Imperfecto</i> . Synthetic IPF |

(27) Spanish periphrastic forms: *perfecto* vs. *progresivo*

- |   |  |
|---|--|
| <p>a. El payaso ha dibujado una flor<br/> <i>The clown have-PRES draw-PF a flower</i><br/>         ‘The clown drew/has drawn a flower’</p>      | <p><i>Perfecto</i>. Periphrastic PF</p>    |
| <p>b. El payaso estaba dibujando una flor<br/> <i>The clown be-pastIPF close-IPF a flower</i><br/>         ‘The clown was drawing a flower’</p> | <p><i>Progresivo</i>. Periphrastic IPF</p> |

Participants were tested in one of these sets of forms: synthetic (26) or periphrastic (27).

The test was administered in two sessions of about 15 minutes for children, testing three verbs-videos in each of the sessions. A training item was introduced before the first session, consisting on a video with three different actions and similar questions as the testing videos. No training was introduced in the second session because children were tested for the second time within the same week. For adults, the whole test was administered in one single session.

Two lists of questions were designed. The two lists differed in the order of the items and the value of the test queries for each of the actions, alternating between the PF form or and IPF form in each of the queries of the list.

### 5.6.3. Participants

The present study tested 41 children and 20 adults that were divided in two groups: one group was tested with periphrastic forms and the other one with synthetic forms.

SYNTHETIC FORMS	PERIPHRASTIC FORMS
20 children age: <5;03-5;11> (mean 5;08)	21 children age: <5;01-5;11> (mean 5;07)
10 adults as control	10 adults as control

Table 5.3: Participants of the Aspect Movies Experiment

All children were monolingual native speakers of Spanish from Pamplona and Valencia. Children attended schools where Spanish is the vehicular language.

Adult subjects come from Madrid and the Basque Country. They were all native speakers of Spanish, though some of them are early bilinguals of Spanish and Basque. All of them have university degrees.

### 5.7. RESULTS

The overall performance of adults and children fits with the expected pattern of responses: subjects accept IPF morphology for complete and incomplete situations and PF morphology for complete –conditions ComP, ComI and IncI– but not PF morphology for incomplete situations –condition IncP – (see Table 5.4).

		SYNTHETIC FORMS				PERIPHRASTIC FORMS				
		COMI	COMP	INCI	INCP	COMI	COMP	INCI	INCP	
ADULTS	Mean	5.90	5.90	4.40	.00	5.60	5.90	5.40	.10	Mean
	SD	.316	.316	1.17	.00	.843	.316	.843	.36	SD
CHILDREN	Mean	5.58	5.84	4.21	1.00	4.86	5.67	4.86	.81	Mean
	SD	.692	.36	.976	0.95	1.62	.58	1.39	.81	SD

Table 5.4: Means of acceptance (YES answers) per group and condition (Max.=6)

The distribution of the variables was normal<sup>56</sup>. Therefore, an ANOVA was performed on the comprehension results analyzing the number of yes-no answers with aspect (PF vs. IPF), situation (complete vs. incomplete) and kind of predicate (change of state vs. incremental theme) as within-subject factors, and age (adults vs. children) and form (synthetic vs. periphrastic) as between-subjects factors. The analysis shows that aspect ( $F(1,56)=542.774$ ;  $p<.001$ ), situation ( $F(1,56)=997.457$ ;  $p<.001$ ) and the interaction between aspect and situation ( $F(1,56)=232.875$ ;  $p<.001$ ) were significant. This means that subjects did not treat PF and IPF aspect alike in the complete and incomplete condition: they accepted ComP, ComI and IncI, but they rejected IncP. There was also a main effect of the kind of predicate

<sup>56</sup>The Kolmogorov-Smirnov test was performed and no differences between the distribution of our data and the normal distribution were found in the ComP ( $Z=.491$ ;  $p<.001$ ) ComI ( $Z=.404$ ;  $p<.001$ ), IncP ( $Z=.329$ ;  $p<.001$ ) and IncI ( $Z=.209$ ;  $p<.001$ ) conditions

( $F(1,56)=32.346$ ;  $p<.001$ ) and the interactions between predicate and situation ( $F(1,56)=34.321$ ;  $p<.05$ ) and predicate and aspect ( $F(1,56)=9.513$ ;  $p<.05$ ) were significant, and the interaction between predicate, situation and aspect ( $F(1,56)=3.504$ ;  $p=.066$ ) was significant at trend level. This means that the kind of predicate was important for certain conditions. There was no general effect of age group ( $F(1,56)=.132$ ;  $p>.05$ ), but the interaction between aspect and age group ( $F(1,56)=4.021$ ;  $p=.05$ ), situation and age group ( $F(1,56)=8.371$ ,  $p<.05$ ), situation, aspect and age group ( $F(1,56)=9.420$ ;  $p<.05$ ) and situation, aspect, predicate and age group ( $F(1,56)=8.098$ ;  $p<.05$ ) were significant, what suggests that children's and adults' performance differed depending on the condition and the kind of predicate. There was no effect of the morphological form ( $F(1,56)=.112$ ;  $p>.05$ ), but the interactions between situation and form ( $F(1,56)=13.677$ ;  $p<.001$ ), aspect and form ( $F(1,56)=10.072$ ;  $p<.05$ ), and situation, aspect and morphological form ( $F(1,56)=9.185$ ;  $p<.05$ ) were significant. This means that there were some differences on the kind of morphological form but not in all conditions.

Given that aspect, situation and the interaction between aspect and situation were significant, we analyzed each condition separately to check whether there were differences in each condition depending on the morphological form, the kind of predicate and the age of the participants:

	ComP	ComI	IncP	IncI	
AGE	1.551	7.498	14.817	2.031	$\chi^2$
	$p>.05$	<b><math>p&lt;.05</math></b>	<b><math>p&lt;.001</math></b>	$p>.05$	Sig.
MORPHOLOGY	.004	11.962	.016	9.622	$\chi^2$
	$p>.05$	<b><math>p&lt;.01</math></b>	$p>.05$	<b><math>p&lt;.05</math></b>	Sig.
PREDICATE CLASS	.511	.431	.29.902	47.211	$\chi^2$
	$p>.05$	$p>.05$	<b><math>p&lt;.001</math></b>	<b><math>p&lt;.001</math></b>	Sig.

Table 5.5: Statistics for age, morphology and predicate class in each of the conditions

As shown in Table 5.5, no difference was found in the ComP condition. In contrast, differences were found on the kind of responses in ComI condition depending on age and morphology:



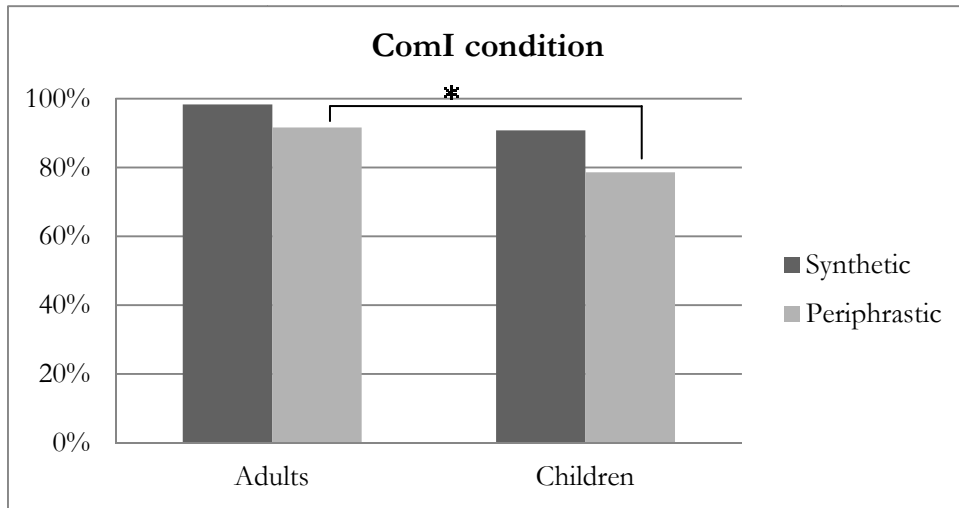


Figure 5.5: Acceptance of the ComI condition per group and morphological form

Further analyses revealed that the rates of acceptance of periphrastic forms in the ComI condition were lower for children than for adults ( $\chi^2= 4.893$ ;  $p<.05$ ), but no statistical difference was found in children's performance with synthetic and periphrastic forms ( $\chi^2= 6.041$ ;  $p>.05$ ) (see Figure 5.5).

In the Inc-I condition, between-group analysis revealed no significant differences between adults and children. However, there differences arose depending on the kind of form and the type of predicate.

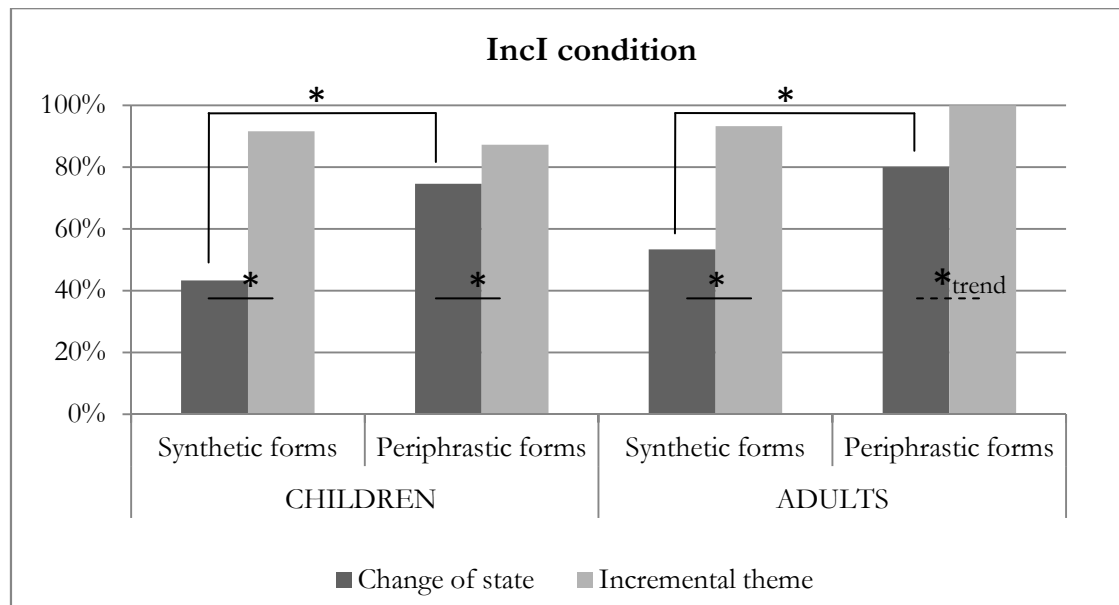


Figure 5.6: Rates of acceptance by age, kind of form and predicate type for Inc-I condition.

Further analyses revealed statistical differences between predicates for adults and children with both synthetic (adults  $\chi^2= 12.273$ ;  $p<.001$ ; children  $\chi^2= 33.112$ ;

$p < .001$ ) and periphrastic forms (adults  $\chi^2 = 6.667$ ;  $p < .05$ ; children  $\chi^2 = 3.294$ ;  $p = .056$ ). Differences between synthetic and periphrastic forms were only attested in change of state predicates ( $\chi^2 = 16.420$ ;  $p < .001$ ) but not in incremental theme predicates ( $\chi^2 = .022$ ;  $p > .05$ ). Thus, both adults and children tended to accept more often incremental theme predicates marked with IPF morphology to describe incomplete events, rejecting in some cases incomplete instances of change of state predicates described by IPF predicates. These differences held for synthetic and periphrastic forms, though they seemed to be more pronounced for synthetic forms, where rates of acceptance of change of state predicates were lower than with periphrastic forms (see Figure 5.6).

In the Inc-P condition, statistical analyses revealed differences between adults' and children's responses and that their performance depending on the kind of predicate.

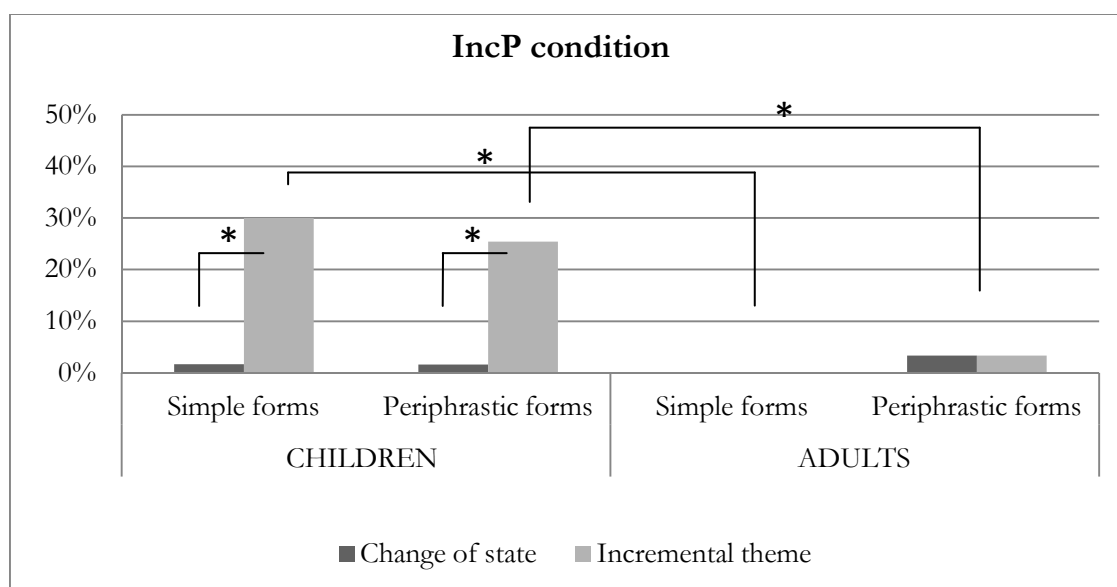


Figure 5.7: Rates of acceptance by age, kind of form and predicate type for Inc-P condition

Further analyses revealed that differences between children and adults were only attested in incremental theme predicates ( $\chi^2 = 17.778$ ;  $p < .001$ ) and not in change of state predicates ( $\chi^2 = 1.513$ ;  $p > .05$ ), and that children treated change of state predicates and incremental theme predicates differently ( $\chi^2 = 30.338$ ;  $p < .001$ ) while adults did not ( $\chi^2 = 1.008$ ;  $p > .05$ ). To some extent, children, unlike adults, incorrectly accepted incremental theme predicates marked with PF morphology to

describe incomplete events. This behaviour did not depend on the kind of morphology and did not extend to change of state predicates (see Figure 5.7).

As a summary, children and adults tended to accept PF forms with telic predicates for complete events, IPF forms for complete and incomplete events and, crucially, tended to reject PF forms for incomplete events. However, differences between children and adults were found (i) at the level of grammatical aspect: children, tended to accept periphrastic forms less often than adults in the ComI; and (ii) at the level of predicational aspect: children tended to reject less often incremental theme predicates than change of state predicates in the IncP condition. Additionally, (iii) both adults and children preferred periphrastic forms over synthetic forms in the IncI condition, especially with incremental theme predicates.

## 5.8. DISCUSSION

The aim of this study was to test 5 year-olds' knowledge of the interaction of predicational and grammatical aspect and the raising and cancelation of completion entailments patterns of the Imperfective Paradox. The results show that children's comprehension of grammatical aspect is overall adult-like: participants in the study accepted IPF forms (*imperfecto* and *progresivo*) for complete and incomplete situations, accepted PF forms (*indefinido* and *perfecto*) for the complete situation and, crucially, they tended to reject PF forms for the incomplete situation. Thus, both adults and five year-old children are aware of the completion entailment that is generated by telic predicates with perfective morphology and of the lack of such entailment with imperfective morphology, in accordance to the Imperfective Paradox (Slobin, 1973).

Two specific variables were measured out throughout the task: A) the different grammatical aspect forms (*perfecto*, *indefinido*, *imperfecto* and *progresivo*) and B) two different kinds of telic predicates (change of state and incremental theme predicates), in order to tease apart the two levels of aspect that interfere in the Imperfective Paradox.

In relation to the kind of morphology, following the Operating Principle of Unifunctionality (van Hout, 1998) in (20), we predicted differences between adults

and children depending on the forms used (21). On the one hand, taking into account the morphosyntactic distribution of tense and aspect in the different forms, we expected periphrastic forms (3)/(4), which have separate tense and aspect morphemes and establish a one-to-one mapping morpheme-to-function mapping, to be acquired earlier than synthetic forms (1)/(2), which have accumulative morphemes that conflate tense and aspect establishing a one-to-many morpheme-to-function mapping. Moreover, we expected the *imperfecto* to be more problematic than the other forms, given that it has more than one meaning (i.e. habitual, continuous and progressive meaning). Our results show that the kind of morphology is a not factor that differentiates adults' and 5 year-old children's performance, except in the ComI condition, in which children accepted less often the *progresivo* than adults. This form was expected to yield more adult-like results in both interpretations of the Operating Principle of Unifunctionality. Additionally, no differences between children and adults have been observed with respect to the kind of morphology in any of the other conditions, suggesting that the transparency of the form or the lack of ambiguity in meaning is not a developmental clue, at least at this age. This, of course, could be due to the fact that the children tested were 5 year-olds, old enough to have already overcome this stage in the acquisition process.

Although our results do not support the hypothesis that some forms are easier than others, differences between the synthetic *imperfecto* and the periphrastic *progresivo* have been attested both in adults and in children comprehension data. The rate of acceptance of synthetic *imperfecto* in the Inc-I condition was significantly lower than that of periphrastic progressive in both groups, especially with change of state predicates, but not with incremental theme predicates –see Figure 5.6–. These two kinds of predicates differ in durativity: change of state predicates are punctual whereas incremental theme predicates are durative. In the videos for the incomplete situation, change of state predicates, as they are punctual, were portrayed as durative attempts to perform the task (*opening, closing and blowing up*) and not as a process of the event leading to its completion, as it happens with incremental theme predicates. This may be the reason why these kinds of predicates are sometimes rejected with the IPF in comprehension. The fact that children and adults behave

similarly in the Inc-I condition rejecting synthetic forms for change of state predicates reveals once more children's adult-like knowledge of grammatical aspect, even at very fine-grained level of distinctions.

With respect to the second variable under testing, the kind of predicate, according to the hypothesis in (22) we expected children to have more difficulties in interpreting as telic –and thus, to reject the IncP condition– incremental theme predicates, whose telicity is derived pragmatically through the boundedness of the object than change of state predicates, whose telicity is derived semantically through the existence of a result state. This prediction was confirmed by our data: children's rejection rates in IncP condition were not adult-like with incremental theme predicates, whereas they were adult-like with change of state predicates –see Figure 5.7–: children sometimes accepted PF telic incremental theme predicates as descriptions of incomplete situations, violating the completion entailments of perfectivity and telicity. This result is in accordance with other studies on the acquisition of telicity such as van Hout (2008).

Given that children were aware of the completion entailments with change of state predicates, this result cannot be attributed to the level of grammatical aspect: it cannot be interpreted as a misunderstanding of the interaction between perfectivity and telicity for completion. On the contrary, the differences in the interpretation of the two kinds of predicates can only be due to difficulties at the level of predicational aspect: that the different syntactic and semantic configuration of telicity in these two kinds of predicates affects their comprehension. According to Ramchand (2008) telicity in change of state predicates is derived semantically through a ResP while in incremental theme predicates it is derived pragmatically through a quantity implicature that establishes that the whole bounded Path is affected by the process. Following this theoretical approach, our results show that semantically-driven telicity may be easier to acquire than pragmatically driven telicity.

The conclusion that children do not always interpret incremental theme predicates as telic is crucial for the previous studies on tense and aspect acquisition. Most of the comprehension studies on the acquisition of grammatical aspect make use of

the Imperfective Paradox to test children's knowledge of grammatical aspect morphemes. In most of the studies the kind of telic predicate is not controlled; however, the kind of predicates most commonly used is incremental theme predicates because they have duration which is crucial to depict an ongoing action in an image. Thus, children's failure to comprehend the grammatical aspect morphology with incremental theme predicates may have been wrongly attributed to incomplete acquisition of grammatical aspect morphemes, instead of misunderstanding at the level of predicational aspect.

### 5.9. SUMMARY AND CONCLUSION

In this chapter, an experiment testing the comprehension and production of PF/IPF forms in Spanish has been presented. Comprehension data have been obtained testing adults and 5 year-old children in a truth value-judgment task in which participants had to judge whether telic predicates with PF and IPF morphology were appropriate to describe complete and incomplete situations. Two different kinds of forms were studied –synthetic and periphrastic forms– with two different kinds of telic predicates –change of state and incremental theme predicates– in order to see whether the different morphological configuration of grammatical aspect and the different kinds of telic predicates influence children's use of grammatical aspect morphology.

Results show that both adults and children tended to accept *pretérito imperfecto* and *progresivo* marking to make reference to complete and incomplete situations, and *pretérito indefinido* and *pretérito perfecto* marking to refer to complete situations, and they crucially tended to reject *pretérito indefinido* and *pretérito perfecto* marking to describe an incomplete situation, as predicted by the Imperfective Paradox. Therefore, the comprehension and production data presented in this section confirm five year-old children's adult-like knowledge of the semantics of grammatical aspect and of the PF vs. IPF distinction.

Some differences have been found with respect to the kind of form used in the tasks. Both adults and children tended to reject change of state predicates when

marked with *imperfecto* to describe an incomplete situation. Moreover, in the production task, subjects tended to avoid the use of the *imperfecto* to describe incomplete situations, especially with change of state predicates. This indicates that progressive and *imperfecto* have different meaning and uses. These differences are common to adults and children. The fact that this behaviour is observed both in adults and in children confirms once more children's adult-like knowledge of grammatical aspect at this age.

Differences depending on the kind of predicate –change of state vs. incremental theme predicate- have been found in comprehension for children, but not for adults: children's rejection rates of incremental theme predicates in the Inc-P condition were lower than with change of state verbs. The target-like behaviour with change of state predicates seems to suggest that children's deviance is not due to a non adult-like understanding of grammatical aspect but of predicational aspect. In fact, taking into account that, according to Ramchand (1998), telicity in change of state predicates is derived semantically through a ResP while in incremental theme predicates it is derived pragmatically through a quantity implicature that establishes that the whole bounded Path is affected by the process, our results show that semantically driven telicity may be easier to acquire than pragmatically driven telicity, in accordance with other studies on the acquisition of telicity such as van Hout (2003).





# **CHAPTER 6**

## **CHILDREN'S COMPREHENSION AND PRODUCTION OF SPANISH GRAMMATICAL ASPECT: THE OVERUSE OF IPF**

### **6.1. INTRODUCTION**

Kazanina & Philips' (2003, 2007) study on Russian children's acquisition of grammatical aspect revealed that the comprehension of grammatical aspect markers is affected by the presence or absence of an explicit RefT in the discourse setting of the experiment : 3-to-5-year-old children's responses for the imperfective were more adult-like when an explicit RefT was provided. Elicited production studies of grammatical aspect markers (Comrie, 1976, Vinnitskaya and Wexler, 2001) have reported that children overproduce imperfective markers when describing complete situations, for which adults almost exclusively use perfectives. In this study, 5-year-old children's comprehension and elicited production of aspect morphemes will be studied in a task in which an explicit RefT is provided to see whether the availability of an explicit RefT improves children's performance, favouring a more adult-like use of grammatical aspect morphemes.

The chapter is organized as follows. Section 6.2 explains the characteristics of predicational and grammatical aspect distinctions and how they interact in the Imperfective Paradox. Section 5.4 introduces the main findings of the acquisition literature on the comprehension and production of grammatical and predicational aspect. The aims of the study are explained in section 5.5. Section 5.6 presents the

experiment whose results are reported in section 6.6. These results are discussed in section 6.7. Some concluding remarks are made in section 6.8.

## 6.2. THE IMPERFECTIVE PARADOX

There are two levels of aspect information: predicational and grammatical aspect. Predicational aspect (or "lexical" or "inner" aspect) is determined by the lexical type of the predicate —the verb and its arguments—. It establishes the contrast between telic and atelic predicates (Comrie, 1976, Vendler, 1967, a. o): telic predicates such as *draw a flower* or *close a jar* have an intrinsic endpoint, while atelic predicates such as *draw* or *run* do not. Grammatical aspect ("viewpoint" or "outer" aspect) is determined by verb morphology. The main contrast at the level of grammatical aspect is the opposition between perfective aspect (PF) and imperfective aspect (IPF). PF looks at the complete event, presenting the situation "from outside", "with its boundaries" and without paying attention to its parts, whereas IPF, views an event "from inside", presenting the event as "ongoing", "without its boundaries" (Dowty, 1979, Smith, 1991). These two levels of grammatical aspect determine the raising or cancelation of completion entailments (Dowty, 1979): telic predicates combined with PF markers such as the synthetic *Pretérito Indefinido* (1a) or the periphrastic *Pretérito perfecto* (1b), entail the completion of the situation and consequently they refer only to complete events, as indicated by the arrow symbol in (1); when combined with IPF markers such as the *Pretérito Imperfecto* (1a) or the *Progresivo pasado* (1b), telic predicates can be related to complete and to incomplete events because IPF cancels the completion entailment, as indicated by the crossed-out arrow symbol in (2).

(1) PF forms:

- |   |   |  |
|---|---|--|
| <p>a. El payaso dibujó      una flor<br/> <i>The clown draw</i> <sub>PF.PAST</sub>    <i>a flower</i><br/>         'The clown drew a flower'</p>                                      | } | →The drawing of a flower<br>came into existence. |
| <p>b. El payaso ha dibujado      una flor<br/> <i>The clown have</i> <sub>PREES</sub> <i>draw</i> <sub>PARTICIPLE</sub>    <i>a flower</i><br/>         'The clown drew a flower'</p> | } |  |

(2) IPF forms:

- |  |   |   |
|--|---|---|
| <p>a. El payaso dibujaba una flor<br/> <i>The clown draw</i><sub>IPF,PAST</sub> <i>a flower</i><br/>         ‘The clown was drawing a flower’</p>                                    | } | <p>-/→ The drawing of a<br/>         flower came into<br/>         existence.</p> |
| <p>b. El payaso estaba dibujando una flor<br/> <i>The clown be</i><sub>IPF,PAST</sub> <i>draw</i><sub>GERUND</sub> <i>a flower</i><br/>         ‘The clown was drawing a flower’</p> | } |   |

The absence of completion entailments in telic predicates with IPF morphology has been known in the literature as the *Imperfective Paradox* since Dowty (2007). Following this Imperfective Paradox, PF telic predicates such as (1) refer to complete events while IPF telic predicates (2) make reference to complete and incomplete events. Completion entailments are relevant when information is provided as foreground. PF forms are used to provide foreground information, while IPF forms are commonly used to describe the background. When IPF is used to give background information and it can refer to complete events and completion is presupposed.

The fact that IPF telic predicates can refer to incomplete events poses two related problems. On the one hand, how can a telic predicate, whose main property is having an intrinsic endpoint, entail that the endpoint is not reached? *Interval-based approaches* to grammatical aspect give an explanation to this problem<sup>57</sup>. On the other hand, from the perspective of meaning-to-form mappings, semantic theory has to explain how an incomplete version of an event, that lacks endpoints, can be identified with the telic predicate. *Intentional accounts* of aspect propose a solution to this problem.

*Interval-based approaches* to grammatical aspect (Borik, 2002; Comrie, 1976; Demirdache & Uribe-Etxebarria, 1997, 2000, 2005; Klein, 1994, 1995; Smith, 1991) claim that the semantics of aspect morphemes reflect speaker’s assertion about certain parts of the eventuality: PF focuses on the whole event; the interval about which the speaker makes an assertion, the Reference Time (RefT) includes the

<sup>57</sup> Two different solutions have been given to this problem under two different theoretical approaches: *event-based approaches* to grammatical aspect and *interval-based approaches*. In this chapter we will only discuss the latter. For more details see chapter 1, section 1.3.2.2. .

Event Time (EvT) whereas IPF takes an ‘inside perspective’ by focusing on a narrower temporal interval of the event that excludes its endpoints because it establishes an inclusion relation of the RefT into the EvT:

- (3) a. PF (Perfective):  $EvT \subseteq RefT$       ---[REF.T [EV.T] ]---->  
 b. IPF (Imperfective):  $RefT \subset EvT$       ---[EV.T [REF.T] ]---->

Consequently, PF asserts that the event has been completed whereas IPF makes no assertion about whether the event has been completed or not, and therefore it does not entail completion. The semantics of IPF establishes that the RefT is included in the EvT. Such a reference interval can be explicit in the discourse or it can be implicitly assumed by the speakers from the context. Therefore, *Interval-based approaches* succeed in explaining how a telic predicate, which by definition has an intrinsic endpoint, can refer to an event that lacks such endpoints.

*Intensional accounts* of the IPF (Bennett & Partee, 1972; Dowty, 1979; Landman, 1992, Asher 1992, a.o.) try to explain the paradox in the opposite direction: how can an IPF telic predicate, which refers to a part of an event, be associated with the telic predicate, which is defined upon its endpoints? To account for this fact, they propose that for an IPF telic predicate to refer to an incomplete event, the partial event in the actual world must be related to some representation of a complete version of the event in some other possible world, an *inertia world*, that is projected upon what was expected of the event in the actual world if such event had not been interrupted. The partial event in the actual world and the complete event in the inertia world coincide up to a point that immediately precedes the event interruption and. For example, IPF predicates such as the ones in (2) are licensed because the speaker projects an inertia world where the event reached completion, an inertia world where the drawing of the flower was finished.

*Interval-based approaches* and *intensional approaches* to the IPF are not mutually exclusive. In fact, Kazanina & Philips (1998) claim that the two insights are necessary to explain the Imperfective Paradox. They propose that the definition of the IPF as an ‘insider’ perspective on the event –as defined by *interval-based approaches*– provides a constraint on the degree of overlap between the full event developed in the inertia

world and the partial event occurring in the actual world –whose existence is defended by *intensional theories*–: the end of the RefT defines the transition point, the earliest point at which the non-actual continuation of the event may diverge from the event in the real world. The constraint imposed by the RefT on the degree of overlap between the event in the actual world and the event in the inertia world is critical because it imposes that the RefT cannot include the time at which the event fails to be completed because no inertia world could be projected in which the event is completed after this failure point.

### 6.3. GRAMMATICAL ASPECT IN CHILD LANGUAGE

The Imperfective Paradox has been used for testing children’s knowledge of aspect at the two different levels. At the level of predicational aspect, PF telic and atelic predicates have been tested to examine children’s knowledge of telicity (Hodgson, 2003, Jeschull, 2007); at the level of grammatical aspect, telic predicates with PF and IPF have been tested to check children’s knowledge of grammatical aspect (Kazanina and Philips, 2007, van Hout, 2005, van Hout, 2008, 2010b, Vinnitskaya and Wexler, 2001, Wagner, 2002, Weist et al., 1984). Comprehension studies at the level of grammatical aspect have shown that children’s comprehension of IPF telic predicates is less adult-like than their comprehension of PF telic predicates. Differences between adults and children have been reported by van Hout (2008, 2001), in Dutch, Italian and Polish by Wagner (2003, 2002) in English, by Kazanina & Philips (2003, 2007) in Russian and by Hodgson (2007) in Spanish. They found that children link IPF marking to completed events in contexts in which adults related IPF only to incomplete events.

Among the factors that have been pointed out to explain children’s non-adult-like understanding of grammatical aspect, Kazanina & Philips (2003) found that Russian children were only able to associate the IPF with an incomplete event only if an ‘insider’ perspective was explicitly provided by a temporal modifier. They tested 3- to-6 year-old-children (mean age 4;10, range 2;10–6;9) in the comprehension of sentences such as (4) and (5) in scenarios that resemble the ones in Figure 6.1, in

which the main event in the lower rectangle reached completion, and Figure 6.2, in which the main event was interrupted:

- (4) Poka mal'chik polival cvety, devochka vytiralaIPF stol.  
'While the boy was watering flowers, the girl was cleaning the table.'
- (5) Poka mal'chik polival cvety, devochka vyterlaPF stol  
'While the boy was watering flowers, the girl cleaned the table.'

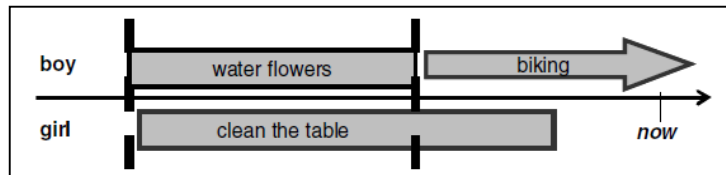


Figure 6.1: Schema of the COMPLETE scenario tested in Kazanina & Philips (2003, Experiment 3, 2007)

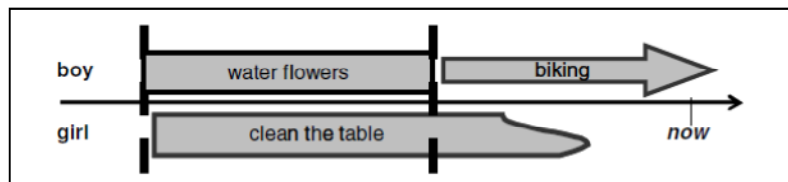


Figure 6.2: Schema of the INCOMPLETE scenario tested in Kazanina & Philips (2007)

In this task, children like adults accepted the PF to refer to an ongoing-success situation, a complete situation, and the IPF to refer to a complete and an incomplete situation.

In the absence of such a temporal modifier, Russian children's performance was different from adults: some children tended to relate sentences such as the ones in (6) to complete situations only, whereas adults related these latter IPF sentences in (6) both to complete and to incomplete situations.

- (6) Gde obezjanka sobiralaIPF gnomika?  
*Where the monkey assembleIPF smurf*  
'Where was the monkey assembling the smurf?'

Thus, Kazanina & Philips (2003) claim that in the absence of a temporal modifier providing an inside perspective on the event, children evaluate IPF using a default RefT that extends over the whole event and possibly continues to the present, including the event failure. Thus, they can only relate IPF to complete events, given that for incomplete events the failure point is visible and, as lack of completion is

attested in the actual world before the point at which the actual world and the possible inertia world diverge, no inertia world can be projected in which the event reached completion. In contrast, adults are able to take an insider perspective that excludes the failure point, being able to choose the incomplete situation for sentences without an explicit temporal modifier such as (6).

In addition to the different patterns in children and adults' interpretation of IPF, elicited production studies have reported that children overuse past IPF morphology with telic verbs to describe complete events, which are usually described by adults with PF morphology (Vinnitskaya and Wexler, 2001).

Vinnitskaya and Wexler (1999) found that 3-6;5 year-old Russian children tended to overproduce IPF forms to describe a complete situation in an elicited production task. Overuse of IPFs for complete situation was also found in a narrative task, in which children also used null or pronominal subjects without a proper antecedent. This overuse of IPF has been analyzed as evidence of children's difficulties with implementing certain kinds of pragmatic knowledge, namely fact that children treat new information as old information in a conversation because they fail to understand other people's minds (Vinnitskaya and Wexler, 2001). In Russian, the choice of aspect is influenced by pragmatic factors (7): "to report a complete action if the speaker assumes that the listener knows that the action is completed, s/he uses an imperfective. Otherwise s/he uses a perfective"(Vinnitskaya and Wexler, 2001:152).

- (7) Večerom otets skazal: 'Ty znaeš, čto tvoj brat s'ezdil v gorod?'  
'Brat **ezdil** v gorod.... Eto dovol'no stranno' otvetil ja.

'In the evening the father said: 'Do you know that your brother **went** (PF) to the city?'  
'My brother **went** (IPF) to the city?... That is rather strange', I answered.

[Example from Veresaev (1986) taken from Vinnitskaya & Wexler (1999, 151)]

Thus, children's overproduction of IPF for complete situation have been analyzed as a result of children's tendency to treat new statements as old information (Chien and Wexler, 1990), as has been argued to happen for other phenomena such as the choice of pronouns (Hodgson, 2003, Thornton and Wexler, 1999, a. o).

Similar results and analysis are provided by Hodgson (1990). In this study, 5-6 year-old Spanish children are reported to overproduce IPF for complete situations in an elicited production task. Since Spanish IPF tenses are used as narratives, children are taken to overuse IPF because they are centred in the narration, describing past events as background information without taking into account if completion took place. This results contrast with Sebastián's (2007) findings that 5 year-old children are able to use PF and IPF aspect in narratives for the foreground-background function.

#### **6.4. RESEARCH QUESTIONS AND PREDICTIONS**

The aim of this study is to examine 5-year-old children's comprehension and elicited production of Spanish aspect markers in a task in which an explicit RefT is provided.

The characteristics of the RefT provided in this experiment are different from Kazanina & Philips' (2003): the explicit temporal clause makes reference to an interval that covers the whole event, including the failure point in the case of incomplete situations. If Spanish children behave like Russian children in their experiment, not being able to take an insider perspective on the RefT to validate the IPF, we expect them (i) to accept both PF and IPF for a complete situation, because the event has reached completion in the actual world and (ii) to reject the use of PF and IPF for incomplete situations because no inertia world can be projected in which a complete version of the telic predicate reaches completion as the failure point is visible in the RefT and children cannot take an inside perspective on this RefT.

With respect to production, given that children's overuse of IPF has been explained as a result of the influence of the narrative and the tendency to treat information about the event as foreground rather than background information (Vinnitskaya and Wexler, 2001), we want to check if, by providing a RefT in the task that functions as background information, we can strengthen treatment of the information about the



event as foreground information, favouring the use of PF morphemes to describe a complete situation.

Additionally, provided that children's overproduction of IPF has been related to children's difficulties in understanding other people's minds and in identifying which information is common to the hearer and which information is new (Kazanina and Philips, 2007), we use a blindfolded puppet which has not seen the event and wants to know whether it was completed or not with the aim that this condition on the puppet will highlight that the final outcome of the event is new information that is not shared by the hearer (the puppet). If these new conditions on the hearer are taken into account by children, we expect them to produce more PF morphemes for the complete situation.

## 6.5. THE STUDY

### 6.5.1. Design and materials

A picture selection task was designed to test comprehension and a sentence completion task was designed to test production. The tasks were based on six video films in which a clown was playing the 'statue game': while the music was playing he could perform a task with different objects but when the music stopped he had to stop. When the music stopped, two different situations could arise: either the clown had finished the action (complete situation) as represented in Figure 6.3 or the clown had not finished the action as represented in Figure 6.4 (incomplete situation).

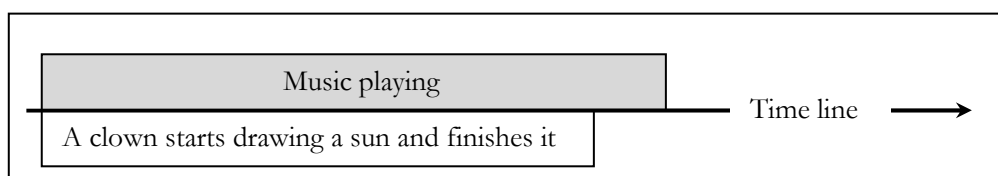


Figure 6.3: Schema of the scenario in the COMPLETE situation

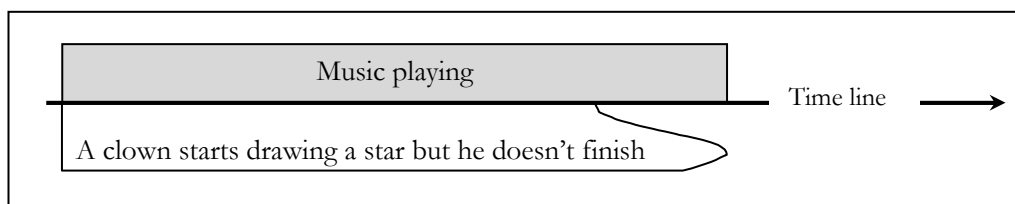


Figure 6.4: Schema of the scenario in the INCOMPLETE situation

In the comprehension task, participants had to help a blindfolded puppet who was trying to guess what happened in the videos. The puppet uttered questions with PF (8) and IPF (9) aspect and the participants had to tell him whether they were right or wrong for the complete (Figure 6.3) and incomplete situations (Figure 6.4) shown in the films.

(8) ¿Mientras sonaba la música el payaso dibujó /ha dibujado una estrella?  
*While play<sub>IMPERFECTO</sub> the music the clown draw<sub>INDEFINIDO</sub>/ has drawn<sub>PERFECTO</sub> a star*  
 ‘While the music was playing did/has the clown draw/drawn a star?’

(9) ¿Mientras sonaba la música el payaso dibujaba /estaba dibujando una estrella?  
*While play<sub>IMPERFECTO</sub> the music the clown draw<sub>IMPERFECTO</sub>/ was drawing<sub>PROGRESIVO</sub> a star*  
 ‘While the music was playing was the clown drawing a star?’

In the elicited production task, participants were asked to help the blind-folded puppet by describing similar complete (Figure 6.3) and incomplete events (Figure 6.4) shown in the video film through a sentence completion task:

(10) Test sentence

*Puppet:* Mientras sonaba/estaba sonando la música, el payaso...  
*While play<sub>IPF</sub>/ be<sub>IPF</sub> playing the music, the clown...*  
 ‘While the music was playing, the clown...’

Subjects were instructed that, as “a rule of the game” they should not to produce sentences with certain forms such as: *not completely, partially, try to, intend to, not + PF*, etc, to favour the use of aspectual morphology alone.

Six verbs of to two lexical (sub)classes of predicates were tested: *incremental theme predicates* (11) and *change of state predicates* (12):

(11) Incremental theme predicates:

Construir ‘to build’  
 Hacer, ‘to make’  
 Dibujar ‘to draw’

(12) Change of state predicates:

Abrir ‘to open’  
 Cerrar ‘to close’  
 Apagar ‘to blow out’

Each verb was related to a short video in which the action was performed six times with 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 first four events were used as comprehension test queries and the last two events were used for testing production, one for the complete situation and one for the incomplete situation. Thus, there were 24 items for comprehension and 12 for production.

The test was administered in two sessions of about 15 minutes for children, testing three verbs-videos in each of the session. A training item was introduced before the first session, consisting of a video with three different actions and similar questions as the testing videos. No training was introduced in the second sessions because children were tested for the second time within the same week. For adults, the test was administered in one session.

### 6.5.2. Participants

The present study tested 41 children and 20 adults. The group tested with synthetic forms in comprehension –forms (1a) and (2a)– and the other group tested with periphrastic forms –forms (1b) and (2b)–.

SYNTHETIC FORMS	PERIPHRASTIC FORMS
20 children age: <5;03-5;11> (mean 5;08)	21 children age: <5;01-5;11> (mean 5;07)
10 adults as control	10 adults as control

Table 6.1: Participants of the Aspect Movies Experiment

All children were monolingual native speakers of Spanish and attended schools where Spanish is the vehicular language in Pamplona and Valencia. All adults were native Spanish speakers and some of them were also competent speakers of other languages such as Basque (11 of them) or English (5 of them). All of them have university degrees.

## 6.6. RESULTS

Overall, both adults and children accepted PF for complete situations, IPF for complete and incomplete situations and rejected IPF for complete situations, as shown in Figure 6.5.

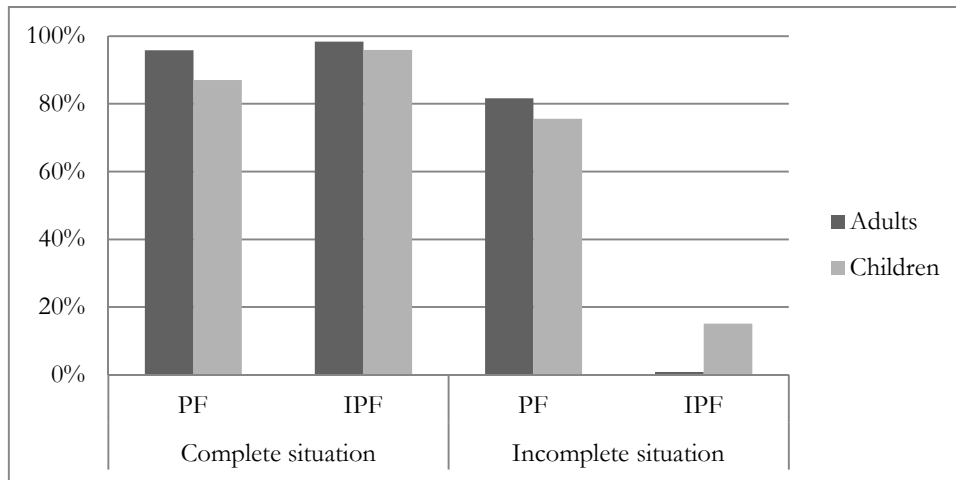


Figure 6.5: Rates of acceptance of PF and IPF morphology by children and adults

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-subject factors, and age (adults vs. children)<sup>58</sup>. The analysis shows that aspect ( $F(1,56)=542.774$ ;  $p<.001$ ), situation ( $F(1,56)=997.457$ ;  $p<.001$ ) and the interaction between aspect and situation ( $F(1,56)=232.875$ ;  $p<.001$ ) were significant. This means that subjects did not treat PF and IPF aspect alike in the complete and incomplete condition: they accepted IPF for complete and incomplete situations and PF for complete situations but they rejected IncP. There was no general effect of age group ( $F(1,56)=.132$ ;  $p>.05$ ), but the interaction between aspect and age group ( $F(1,56)=4.021$ ;  $p=.05$ ), situation and age group ( $F(1,56)=8.371$ ,  $p<.05$ ) and situation, aspect and age group ( $F(1,56)=9.420$ ;  $p<.05$ ) were significant, what suggests that children's and adults' performance differed depending on the condition. Further analyses revealed that adults' and children's performance was significant with the PF in the complete condition ( $\chi^2=14.817$ ;  $p<.001$ ) and the IPF in the complete condition ( $\chi^2=7.498$ ;  $p<.05$ ), but not in the complete condition for the PF ( $\chi^2=1.551$ ;  $p>.05$ ) and for the IPF in the incomplete condition ( $\chi^2=2.031$ ;  $p>.05$ ).

<sup>58</sup> For a more detailed analysis of the comprehension data, see chapter 5.

Production data were coded using four categories: PF, IPF, Other Responses and non-valid responses, including in each of these categories the forms in Table 6.2.

CATEGORY	FORMS	EXAMPLES
PF	SYNTHETIC	Dibuj-ó <i>Draw- PAST.PF.3p.sing</i> 'Drew'
	PERIPHRASTIC	Ha dibuj-ado <i>Have-PRES.3p.sing draw-PF</i> 'Has drawn' Hab- ía dibuj-ado <i>Have-PAST.IPF.3p.sing draw-PF</i> 'Had drawn'
IPF	SYNTHETIC	Dibuj-aba <i>Draw-PAST.IPF-.3p.sing</i> 'Was drawing'
	PERIPHRASTIC	Est-aba dibuj-ando <i>Be-PAST.IPF.3p.sing draw-IPF</i> 'Was drawing' Ha est-ado dibu-jando <i>Have-PRES be-PF draw-IPF</i> 'Has been drawing'
OTHER	COMPLETION PERIPHRASES Complete situation	Termin-ó de dibujar <i>Finish-PF to draw-INF</i> 'Finished drawing' Consigui-ó dibujar <i>Manage-PF draw-INF</i> 'Managed to draw'
	VOLITIVE PERIPHRASES Incomplete situation	Quer-ía dibujar <i>Want-IPF draw-INF</i> 'Wanted to draw' Intent-ó dibujar <i>Try-PF draw-INF</i> 'Tried to draw'
	NEG. OF COMPLETION Incomplete situation	No dibuj-ó /ha dibujado <i>No draw-PAST.PF/ havePRES drawPF</i> 'Didn't draw'/'Hasn't drawn' No termin-ó de dibujar <i>No finish-PF to draw-INF</i> 'Didn't finish to draw'
	ATELIC V Incomplete situation	Soplar INSTEAD OF apagar 'To blow' 'to blow out'

CATEGORY	FORMS	EXAMPLES
NON VALID	INFINITIVE	Dibuj-ar 'To draw'
	TENSES WITH WRONG TEMPORAL VALUE	Dibuj-a <i>Draw-PRES. 3p.sing</i> 'Draws'/'Is drawing' Est-á dibuj-ando <i>Be-PRES draw-IPF (ger.)</i> 'Is drawing' Va a dibuj-ar <i>Go-PRES to draw-INF</i> 'Is going to draw'
	NO RESPONSE	

Table 6.2: Coding of the responses provided in the production experiment

As the production task preceded a comprehension part in which participants were tested either with synthetic forms of periphrastic forms, responses were divided into two groups, depending on whether the participants were tested with synthetic or periphrastic forms in comprehension.

Table 6.3 shows the distribution of the different kinds of responses produced by adults and children for the complete and incomplete situations:

		COMPLETE SITUATION		INCOMPLETE SITUATION					
		Adults	Children	Adults	Children				
FORMS USED IN PRODUCTION	IPF	Synthetic	5	18.3	53.3	18.3	FORMS TESTED IN COMPREHENSION		
		Periphrastic	0	25.8	15	29.2			
		Total	5	44.1	68.3	47.5			
	PF	Synthetic	83.3	25	0	2.5			
		Periphrastic	11.7	15.8	0	3.3			
		Total	95	40.8	0	5.8			
	Other		0	5.8	31.7	26.7			
	Non-valid		0	9.2	0	20			
		IPF	Synthetic	3.3	3.2	3.3		2.4	Periphrastic group
			Periphrastic	1.7	21.4	80		32.5	
Total			5	24.6	83.3	34.9			
PF		Synthetic	8.3	2.4	0	0			
		Periphrastic	86.7	32.5	0	4			
		Total	95	34.9	0	4			
Other		0	38.1	38.1	57.1				
Non-valid		0	2.4	2.4	4				

Table 6.3: Proportion of types of responses in the complete and incomplete situation produced by adults and children from the synthetic and periphrastic group.

Chi-square tests revealed that both adults and children produced different forms depending on the situation ( $\chi^2= 39.594$ ;  $p<.01$  for adults and  $\chi^2= 26.602$ ;  $p<.01$  for children). Adults mainly produced PF forms for the complete situation and IPF forms for the incomplete situation. Children produced a wider range of responses, providing ‘other’ answers both in the complete and in the incomplete condition, producing more IPF forms than adults in the complete condition and giving more ‘non-valid’ answers for the incomplete condition. Crucially, children almost never produced PF forms for incomplete situations, showing that they are aware of the completion entailment of PF telic predicates, as Figure 6.6 shows.

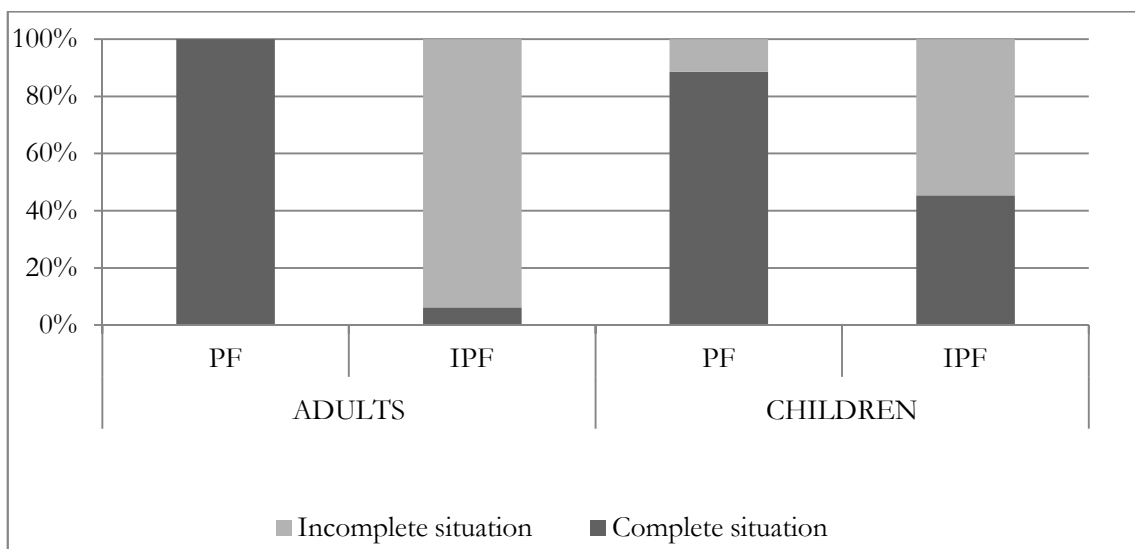


Figure 6.6: Percentage of use of PF and IPF depending on the situation (complete vs. incomplete) by adults and children.

There were differences between the group tested with synthetic forms and the group tested with periphrastic forms, as it can be seen in Table 6.3. First, adults seem to be primed by the kind of form used in the comprehension part: they produced significantly more synthetic forms when tested with the synthetic-form version in comprehension and more periphrastic forms when tested with the periphrastic-form version in comprehension. Thus, the kind of morphology used in comprehension seems to determine the kind of morphology used in production in the adult group ( $\chi^2= 19.749$ ;  $p<.01$ ) but not in the children's group ( $\chi^2= 1.895$ ;

$p > .05$ ). In fact, children preferred periphrastic forms even when tested with synthetic forms<sup>59</sup>.

The kind of predicate seemed to affect participant's responses: adults and children produced more 'other' forms with change of state predicates than with incremental theme predicates ( $\chi^2 = 10.516$ ;  $p < .05$ ). The tendency to produce more 'other' forms with change of state predicates was also present in children responses, who also produced more of 'other' forms with change of state predicates than with incremental theme predicates ( $\chi^2 = 29.914$ ;  $p < .01$ ).

As a summary, for comprehension two main results were found: (i) children accept PF for complete situations, IPF for complete and incomplete situations and they crucially reject PF for incomplete situations, although (ii) their rejection rates of the PF for incomplete situations are lower than adults'. For production children are reported to (iii) almost never produce IPF for the complete situation, but (iv) children, unlike adults, overproduced IPF forms in the complete condition.

Additionally, two other minor results can be pointed out for production, namely that A) children produced mostly periphrastic forms even when tested with synthetic forms in comprehension, while adults tended to produce synthetic forms or periphrastic forms according to the kind of form they were tested on comprehension but B) in the incomplete condition both adults and children used mostly periphrastic forms over synthetic ones.

## 6.7. DISCUSSION

The aim of this study is to examine 5-year-old children's comprehension and elicited production of Spanish grammatical aspect markers in a task in which an explicit RefT is provided.

Kazanina & Philips' (2007) had reported for comprehension that Russian children (mean age: 4;2) failed to accept IPF for incomplete situations when no explicit RefT

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<sup>59</sup> Additionally, as children tested with periphrastic forms tended to produce more 'other' forms (see Table 6.3), but this is because we were stricter in the synthetic group insisting more on "the rules of the game" trying to elicit less 'other' forms.



was provided establishing an insider perspective on the event that excludes the failure point for incomplete situations. In the experiment presented here, an explicit RefT was provided but with different characteristics: instead of providing an insider perspective as in Figure 6.2, the explicit temporal clause made reference to an interval that covered the whole event, including the failure point in the case of incomplete situations, as represented in Figure 6.4. If 5-year-old Spanish children behaved as Russian children in Kazanina & Philips' (2003) experiment, we expected them to reject the use of IPF for incomplete situations because no inertia world could be projected in which a complete version of the telic predicate reaches completion as the failure point is visible in the RefT and children cannot take an inside perspective on this RefT. We also expected them to accept both PF and IPF for a complete situation, because the event has reached completion in the actual world and to reject PF for incomplete situations because PF entails completion.

With respect to production, previous studies have reported that children overproduce IPF forms in contexts in which adults produce PF (Hodgson, 2003, Vinnitskaya and Wexler, 2001). This overuse of IPF has been explained as a result of the influence of narratives in children's productions and their tendency to treat information about the event as foreground rather than background information (Vinnitskaya and Wexler, 2001) and to children's difficulties in understanding other people's minds and in identifying which information is common to the hearer and which information is new (Kazanina and Philips, 2007). In the experiment presented here we provided an explicit RefT in the task that functions as background information, reinforcing the idea that the information about the event is foreground information and not background information. Additionally, a blindfolded puppet, which had not seen the event and wanted to know whether it was completed or not, was used in the experiment to highlight that the final outcome of the event is new information that is not shared by the hearer (the puppet). If these new conditions on the hearer are taken into account by children, we expect them to produce more PF morphemes to describe complete events.

Results showed an adult-like use of PF markers. Both adults and children accepted PF for complete situations and rejected PF for incomplete situations in

comprehension, and they almost never produced PF to describe incomplete situations. Therefore, children are aware of the completion entailments that arise when telic predicates are marked with PF.

Differences between adults and children were found in the use of IPF morphology, but only in production. In comprehension, both adults and children accepted IPF to refer to complete events, as expected, but they also accepted IPF to refer to incomplete events, which means that children, like adults, can take an insider perspective on the RefT and select a subinterval of the RefT that excludes the failure point of the event to validate the IPF. Production results also point in this direction: children produced IPF forms for the incomplete situation as well as for the complete situation<sup>60</sup>. Following the schema represented in Figure 6.7, the fact that children used IPF for the complete and the incomplete situation means that they are assuming a smaller interval than the interval denoted by the while-clause, which excludes the completion point or the failure point.

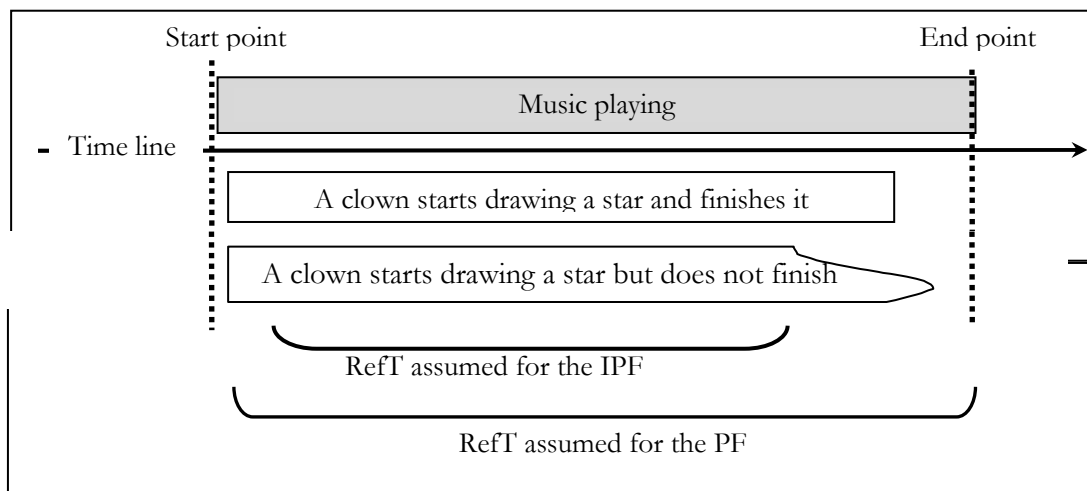


Figure 6.7: Schemas for the RefT of PF and IPF in the complete situation

Thus, Spanish children are able to take an insider perspective on the RefT, in contrast to Russian children in Kazanina & Philips (2007). The fact that Spanish children can interpret and produce IPF for incomplete situations such as the ones in Figure 6.4 can be explained because Spanish children in this experiment were older

<sup>60</sup> Children produced a wider range of forms apart from PF and IPF, especially in the periphrastic form group in which the instruction against the use of other forms was weak

than in Russian children in Kazanina & Philips' (1989) and at this age they might have acquired the adult semantics of the IPF.

However, we think that the properties of the RefT in this task may have played a role for enabling the inside-perspective: the 'while clause' contained a homogeneous predicate: *the music was playing*. Because this predicate is homogeneous, any subinterval of 'music playing' also qualifies as 'music playing'. It is the homogeneous nature of the RefT that is crucial for the possibility of taking an inside perspective on the event in a within-failure situation<sup>61</sup>. Therefore, we predict that when the properties of the *while* clause change, the possibilities of the IPF in the main clause to refer to situations such the one in Figure 6.4 will also change for adults. In fact, our intuition is that sentences such as the ones in (13) are not compatible with the situation in Figure 6.4 even though the verb in the main clause is marked with IPF.

- (13) a. Mientras estuvo sonando música, el payaso hacía el puzle  
*While bePF sounding the music, the clown makeIPF the puzzle*  
 While the music
- b. Hasta que la música paró, el payaso hacía el puzle  
*Until that the music stopPF, the clown makeIPF the puzzle*  
 Until the music stopped, the clown was making the puzzle

Thus, it is not only the properties of the IPF in the main clause but also the properties of the temporal modifiers that determine whether the IPF can take an inside perspective and refer to incomplete situations such as the ones in Figure 6.4.

Children's comprehension of IPF and children's use of IPF for the incomplete situation were adult-like showing that children can take an insider perspective over the adverbial clause and select a narrower interval to validate the IPF. However, children sometimes used IPF to describe the complete situation whereas adults used the PF. The use of IPF for the complete situation can also be explained as a result

<sup>61</sup> Furthermore, analyses on the properties of *while* clauses, such as the one by Demirdache and Uribe-Etxebarria (2004) claim that these temporal clauses establish a simultaneity relation in which the RefT is included within time denoted by the *while* clause: .

(vii) While the music was playing... ----[music playing [RefT ] ]---->

of the insider perspective in which only part of the interval denoted by the while-clause is selected: the interval during which the action was ongoing previous to its completion, as illustrated in Figure 6.7. In contrast, for the PF the RefT is equivalent to the whole interval of music playing or at least to a subinterval that contains the completion point. Therefore, children's uses of IPF for the complete situation instead of PF could be due to the fact that children were assuming a different RefT than the one adults interpreted to be relevant in the experimental setting: adults assumed the maximal interval of the while clause, thus producing PFs whereas children apparently did not. IPF in this context is underinformative because it does not assert about the maximal interval of the event denoted by the while-clause. Such underinformative use in the context of this experiment violates Gricean's (2003) conversational maxim of quantity.

Although IPF is less informative than the PF in the context of our experiment, IPF is commonly used to refer to complete events in other contexts: when it provides background information and when the completion information is presupposed by the hearer. Children's overuse of IPF for complete events had been attested in other studies and had been analyzed as evidence that children treat information about the event as foreground rather than background information (Vinnitskaya and Wexler, 2001). We expected that the inclusion of an explicit RefT in the task would favour more adult-like uses of grammatical aspect markers by children because they would treat the information in the temporal clause as background and the information about the event as foreground. However the inclusion of an explicit RefT did not prevent children to produce IPF for the complete situation. Additionally, children's overuse of the IPF for complete situations had been related to children's difficulties in understanding other people's minds and in identifying which information is common to the hearer and which information is new (Grice, 1989). In adult Russian, IPF can be used to describe completed events when completion is presupposed, but not when it is new information for the hearer. We expected that the inclusion in the experiment of a blindfolded puppet that wanted to know in the events had been completed would reinforce the idea that completion information

was unknown by the hearer. However, the inclusion of the eye-blinded puppet did not prevent children to produce IPF for the complete situation.

Therefore, even in situations in which the background-foreground function is clear and in which it is clear that the completion information is not known to the hearer, children overproduce IPFs to describe complete situations. In these contexts, producing an IPF form instead of a PF form is underinformative because IPF asserts about a smaller interval of time that excludes the completion point, thus it does not entail completion. The use of an underinformative IPF for a complete situation is pragmatically deviant, since it violates the maxims of conversation (Kazanina and Philips, 2007).

### **6.8. CONCLUSION**

In this study 5 year-old children's comprehension and elicited production of aspect morphemes have been examined in a task in which an explicit RefT was provided, with the aim to check whether i) the fact that the RefT included the failure point in the incomplete situation would prevent children to accept IPF forms for complete situations, given that they are claimed to fail to adopt an inside perspective on the RefT (Hodgson, 2003) and ii) whether the inclusion of the RefT would reinforce the treatment of the information about the event as foreground information, thus increasing children's production of PF morphemes to describe complete situations, in contrast to other elicited production studies (Kazanina and Philips, 2007, Vinnitskaya and Wexler, 2001).

No differences between adults and children were found in comprehension. Both adults and children rejected PF to refer to incomplete events and accepted PF for complete events, showing that telic PF predicates entail completion; additionally, both adults and children accepted IPF to refer to complete and incomplete events, showing that they can adopt an insider perspective over the RefT in contrast to Kazanina and Phillips' (2003) findings.

Differences between adults and children were found in production data despite the availability of an explicit RefT in the experiment: adults produced mostly PF forms

to describe complete situations, whilst children produced both PF and IPF forms in the complete situation. This overuse of IPF is in accordance to what has been found in the literature (Grice, 1989, Vinnitskaya and Wexler, 2001) and has been explained as a pragmatic violation of Gricean's (1979) maxim of quantity: when children produce IPF for the complete situation they are taking an insider perspective on the interval denoted by the while-clause that excludes the event's endpoint, and thus they are not asserting about the maximal interval of the while-clause, as adults do.

# CHAPTER 7

## TASK EFFECTS IN THE ACQUISITION OF IPF

### ASPECT: SEMANTICS OR PRAGMATICS?

#### 7.1. INTRODUCTION

According to the Imperfective Paradox, perfective (PF) telic predicates entail completion while imperfective (IPF) telic predicates do not (Olsen, 1997). Therefore, telic PF sentences can be related only to complete events, while IPF telic sentences can refer to complete and incomplete events. However, in certain contexts, IPF can be pragmatically enriched generating the Scalar Implicature that completion has not been reached (Smith, 1991, Vinnitskaya and Wexler, 2001).

Some studies on the acquisition of grammatical aspect conclude that PF and IPF marking are understood adult-like by children by the age of three (Kazanina and Philips, 2007, Weist et al., 1991, exp.3&4, Weist et al., 1984). However, other studies have documented that children at the age of five sometime relate IPF telic predicates only to complete events (van Hout, 2005, exp.1 & 2) or to complete and incomplete events in situations where adults related IPF only to incomplete events (Hodgson, 2003, van Hout, 2008). Additionally, elicited production studies report that five year-old children produced IPFs to describe complete versions of events corresponding to telic predicates unlike adults, who tend to produce PF predicates for complete situations (Comrie, 1976, Vinnitskaya and Wexler, 2001).

In this study data of 5-year-old's comprehension and production of Spanish grammatical aspect markers obtained using three different experimental methods will be compared: a picture-selection task, a truth-value judgment task and an elicited production task. We hypothesize that these tasks involve different kinds of

reasoning: truth-value judgment tasks induce pure semantic reasoning while picture-selection tasks and elicited production tasks involve pragmatic reasoning and we predict that divergences between children and adults will appear only in the tasks that involve pragmatic reasoning: in the picture-selection task and the elicited-production task.

The paper is structured as follows. Section 7.2 explains the basic concepts of lexical and grammatical aspect and their semantic meaning and pragmatic uses. Section 7.3 includes an overview of the most relevant findings on the literature on the acquisition of grammatical aspect. The research questions and predictions are presented in section 7.4. The experiments and results are presented in section 7.5 followed by a discussion in section 7.6. Section 7.7 summarizes the main conclusions of the study.

## 7.2. 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 main distinctions at the level of predicational aspect is telicity, often defined in terms of culmination (Comrie, 1976, Vendler, 1967): *telic* predicates refer to events conceptualized as having intrinsic endpoints; *atelic* predicates, on the contrary, refer to events that do not involve any goal or intrinsic endpoint.

Grammatical aspect (also known as “viewpoint aspect” or “outer aspect”) is mainly determined by verbal inflectional morphology and particles. The main distinction at this aspectual level is the opposition 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” (Demirdache and Uribe-Etxebarria, 2000, Smith, 1991). According to perspective-based theories of grammatical aspect (Demirdache and Uribe-Etxebarria, 2005, 2007, 1994, Olsen, 1997, a.o.), grammatical aspect reflects the speaker’s commitment to the existence of certain parts of the eventuality (see chapter 1, section 3.2.2). Under this view, PF focuses on the whole event: it means that the interval for which the speaker makes an assertion,



the Reference Time (RefT), includes the Event Time (EvT). In contrast, IPF focuses on a narrower temporal interval of the event that excludes its endpoints; it establishes an inclusion relation of the RefT in the EvT, thus not making any assertion about the beginning or the end of the situation.

The use of PF and IPF aspect marking gives rise to different with telic predicates. Telic predicates marked with PF aspect entail completion, as indicated by the arrow in (1). Completion in this case is an entailment because it is not cancellable as shown by the contradiction in (2):

- (1) El payaso construyó un puente → El puente está terminado  
*The clown build-PF a bridge*      *The bridge is-PRES finished*  
 ‘The clown built a bridge’      ENTAILS      ‘The bridge is done’
- (2) #El payaso construyó un puente, pero no lo terminó.  
*The clown build-PF a bridge, but not it finishPF*  
 #The clown built a bridge but he didn’t finish it

When combined with IPF, telic predicates do not entail completion, as indicated by the crossed out arrow in (3). The use of IPF conveys that the event was ongoing in the past, but the completion of the event is neither asserted nor entailed. Therefore, IPF telic predicates can be followed by the negation of the result without creating a contradiction (4):

- (3) ...El payaso construía un puente ~~→~~ El puente está terminado  
*The clown build-IPF a bridge*      DOES NOT      *The bridge is-PRES finished*  
 ‘The clown was building a bridge’      ENTAIL      ‘The bridge is done’
- (4) El payaso construía un puente, pero no lo terminó.  
*The clown build-IPF a bridge, but he did not finished it.*  
 ‘The clown was building a bridge, but he did not finished it’

Thus, telic predicates can refer to complete and incomplete events when combined with IPF, but only to complete events when combined with PF.

Although IPF can refer both to complete and incomplete events, by pragmatic enrichment it is often related only to incomplete events. PF and IPF form an informative scale in which the PF is more informative than the IPF, because PF asymmetrically entails IPF, since the PF entails completion while IPF does not. On this scale, PF is the strong term while IPF is the weak term. Provided this scale, the

use of IPF instead of PF can generate a scalar implicature by which IPF implies lack of completion (Horn, 1989, Smith, 1991). Thus, in certain contexts, the fact that the speaker uses IPF may make the hearer infer that there was no completion.

There are two different approaches to the phenomenon of SI. The Neo-Gricean approach to SI (Grice, 1989, Levinson, 2000) presumes that both speaker and hearer follow the maxims of conversation (Sperber and Wilson, 1994): 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 (de Villiers and de Villiers, 1976), 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.

### **7.3. THE ACQUISITION OF GRAMMATICAL ASPECT**

Tense and aspect markers are used productively by children as young as two according to spontaneous speech studies (Andersen and Shirai, 1996, for English: Gathercole et al., 1999, Hernandez Pina, 1984, for Spanish: Jackson-Maldonado and Maldonado, 2001, Sebastián et al., 2004). However, these 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 whereas atelic predicates tend to appear inflected for present and/or imperfective morphology. This tendency is crosslinguistically robust (see Vinnitskaya and Wexler, 2001 for an overview).

In contrast to these spontaneous production data, in elicited production studies, children as young as three produce non-prototypical combinations of past IPF morphology with telic verbs (for Russian: Grinstead et al., 2009b). Additionally, comprehension studies reveal that children as young as three can interpret tense independently of the telicity of the predicate (Kazanina and Philips, 2007) and that

they correctly comprehend non-prototypical combinations of telicity and past imperfective morphology (van Hout, 2008, Vinnitskaya and Wexler, 2001, Wagner, 2002, Weist et al., 1991, Weist et al., 1984). These results suggest that even if they do not use all the possible combinations of tense and aspect morphology with the different kind of predicates in their spontaneous production, children at age 3 use 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 in some contexts in which adults relate IPF mainly to incomplete events, children as old as five relate past IPF telic predicates to both complete and incomplete events (for English: Hodgson, 2003, for Polish and Dutch: Wagner, 2002). Additionally, differences have been found between adults and children in elicited production: five-year-old children sometimes over-use IPF telic predicates for describing complete events, a situation for which adults produce mainly PF forms (for Russian: Kazanina and Philips, 2007, for Russian: Vinnitskaya and Wexler, 2001).

There are crucial differences in the methods used and the adults' responses for the IPF across tasks. In truth-value judgment tasks participants had to judge whether the IPF can be used for complete and incomplete events independently. In such tasks, adults accepted the use of IPF both for complete and incomplete situations and children's responses were adult-like (Vinnitskaya and Wexler, 2001, exp. 3 & 4). In forced sentence-to-scene matching tasks, participants were given two forms –PF and IPF– and two different situations – a complete and an incomplete version of the event– and were asked to match the forms to the meanings. In these tasks, adults matched PF to the complete situation and IPF to the ongoing or incomplete situation<sup>62</sup>. Children's responses for the IPF were above chance, in some of the

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<sup>62</sup> There is a difference in the materials used and the kind of situations that are contrasted. In studies that used pictures, ongoing and complete versions of the events were contrasted; in studies that used videos or acted-out situations, complete and incomplete versions of the events were contrasted. IPF refers to an ongoing event in the past, and thus, both the ongoing picture and the

experiments using this technique: the IPF was matched to pictures depicting the event as ongoing (Wagner, 1998, Weist et al., 1991, Weist et al., 1984). However, other studies using forced sentence-to-scene matching tasks found that children matched IPF to complete and incomplete events (2005, Wagner, 2002). In her experiments, Wagner tested adults in two different ways: first, adults had were given only one sentence at a time and were asked to match the sentences to one situation; then, adults were retested: they were given the two sentences –a sentence with PF and a sentence with IPF- and had to match each of them to the different pictures. Five year-olds' performance fitted that of adults' performance in the first testing, when they were given only one sentence: both adults and children consistently matched PF to the completed event, but remained agnostic about whether to match the IPF sentence to the complete or the incomplete situation. In contrast, adults in first testing were taking into account the contrast between PF and IPF, matching IPF to the incomplete situation consistently. Non-adult-like results were also found in picture-selection tasks in which participants were given just either of the forms – PF or IPF- that they had to match to different situations –a complete, an incomplete or ongoing version of the event-; in these tasks adults chose for the IPF only ongoing events while children matched IPF both to complete and ongoing events (2007, van Hout, 2007a, 2008). Additionally, Kazanina & Philips (2003, exp. 1 & 2) performed a sentence-to-scene matching task in which a character performed a complete, an incomplete and an non-started action in three different locations along a road and children had to relate PF and IPF to these locations. The choice of more than one location was encouraged by asking participants 'where else?' questions. Adults' matched the IPF to both complete and the incomplete situations and children fell into two groups: some of the children provided adult responses while others matched the IPF only to the complete situation. Adults' production patterns of grammatical aspect in elicited production tasks were similar to the responses provided in forced sentence-to-scene matching tasks and picture-selection tasks: they produced PF for complete situations and IPF for incomplete situations

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ongoing stage that resulted in an incomplete situation represented in the acted-out are possible referents for the IPF.

In contrast, children overproduced IPF for the complete situation (Kazanina and Phillips, 2003, Vinnitskaya and Wexler, 2001).

So, as a summary, in truth-value judgment tasks adults related the PF both to complete and incomplete situations while in forced sentence-to-scene matching tasks, in picture-selection tasks and in elicited production tasks adults related the IPF only to an incomplete or ongoing version of the event. Crucially, adult-like performance has been reported with the former but not with the latter, as summarized in Table 7.1:

TASK	TARGET / ADULTS' RESPONSE	CHILDREN'S RESPONSE	REFERENCES
Truth-value judgment	Complete & incomplete	Complete & incomplete	Kazanina & Phillips (2007, 2001)
Forced sentence-to-scene matching tasks	Ongoing	Ongoing	Vinnitskaya & Wexler (1991) Weist et al. (2003, 1984)
	Incomplete (one-sentence)	Complete & incomplete	Wagner (1998, 2002)
	Complete & incomplete (two sentences)	Complete & incomplete	Wagner (1998, 2002)
Sentence-to-scene matching tasks	Complete & incomplete	Complete & incomplete/ only complete	Kazanina & Phillips (2007, 1997)
Picture-selection	Ongoing	Complete & ongoing	Hollebrandse et al. (2005), van Hout (2005, 2007, 2008)
Elicited production	Incomplete	Complete & incomplete	Hodgson (2003), Vinnitskaya & Wexler, (2001)

Table 7.1: Tasks and participant's responses for IPF across studies

We claim that the tasks and the corresponding target responses differ in the kinds of reasoning they impose. In truth-value judgment tasks, forms are evaluated individually as to whether they are proper descriptions of complete and incomplete

situations. Thus, the participant is asked about all the interpretations that a form allows, about the semantic meaning of the different forms. On the contrary, forced sentence-to-scene matching tasks, picture-selection tasks and elicited production tasks involve pragmatic reasoning because the forms have to be contrasted to select which one is most appropriate in a certain context. In forced sentence-to-scene matching tasks two forms are given –PF and IP– and these forms have to be contrasted and matched one by one to two versions of the events: the complete and the incomplete version, respectively. In picture-selection tasks a form is given and the participant chooses the preferred interpretation among different pictures. Similarly, in elicited production tasks, the forms are subconsciously compared to determine which is the most appropriate to describe the situation. Accordingly, in these three tasks there is a choice of the most appropriate form for a given situation and this choice involves contrasting forms in their informativity. 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. Thus, IPF can give rise to an scalar implicature (SI) according to which IPF is used instead of PF because the speaker does not know if completion took place (Noveck, 2004, Smith, 1980). Consequently, adults relate the IPF only to incomplete events in forced sentence-to-scene matching tasks, picture-selection tasks and elicited production tasks. In these tasks, children tend to give non-adult-like responses, matching IPF to both complete and incomplete events. .

Non-adult-like responses are not unexpected in tasks that impose the calculation of scalar implicatures, given that late acquisition of scalar implicatures has been reported in other domains of language, such as quantifiers, numerals, definite and indefinite articles, etc., (Papafragou and Musolino, 2003, Pouscoulous et al., 2007, van Hout et al., 2010b) and even for aspectual verbs (Noveck, 2000).

#### **7.4. RESEARCH QUESTIONS AND PREDICTIONS**

The present study is aimed to check our hypothesis that truth-value-judgment tasks involve pure semantic reasoning whereas picture-selection tasks and elicited production tasks involve pragmatic reasoning.

Adults' and five-year-olds' comprehension and production of grammatical aspect morphemes in three different tasks –a picture-selection task, a truth-value judgment task and an elicited-production task– will be compared.

Our predictions for adults' responses are as follows: if it is true that truth-value-judgment tasks involve pure semantic reasoning, we expect adults to accept IPF for both complete and incomplete events; if picture-selection-tasks and elicited-production tasks involve pragmatic reasoning, we expect adults to relate IPF only to incomplete or ongoing events because IPF pragmatically implies lack of completion.

Given that children at the age of five are claimed to have acquired semantics but they fail to derive scalar implicatures (Dowty, 1979, Pouscoulous et al., 2007) we expect that they provide semantic responses, we expect children to relate the IPF both to complete and incomplete events, across tasks. Thus, children's performance will be adult-like in the truth-value-judgment task, which involves semantic reasoning, but not in the picture-selection task and the elicited production task, which involve pragmatic reasoning.

If differences are found in children's performance across the three tasks, the hypothesis that the three tasks involve different grammatical demands (semantics vs. pragmatics) could be taken as a possible explanation for the disagreements in the results reported in the literature on comprehension and production of IPF (see Table 7.1).

## **7.5. THE EXPERIMENTS**

### **7.5.1. Picture selection task<sup>63</sup>**

12 monolingual Spanish children (mean age: 5;10; range <5;03-5;11>; 6 males & 6 females) of middle-low socioeconomic status participated in the study and 8 adults were tested as control group.

The procedure consisted on testing children's capacity to link PF morphology (5a) and IPF (5b) with pictures showing an event in three possible stages (Figure 7.1).

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<sup>63</sup> Adapted from Van Hout (2005, 2008). For more details on this experiment, see chapter 4.

- (5) a. El niño hizo el puzle PERFECTIVE  
*The boy make<sub>P.AST.PF</sub> the puzzle* *Pretérito Indefinido*  
 ‘The boy was making/made the puzzle’
- b. El niño hacía el puzle IMPERFECTIVE  
*The boy make<sub>P.AST.IPF</sub> the puzzle* *Pretérito Imperfecto*  
 ‘The boy was making/made the puzzle’

The test sentences were included in a short story in which an event started, but was interrupted by the closure of some curtains that did not let the participant see the end of the story. A puppet looked behind the curtains and told the participant what happened by uttering the test sentence with a telic PF or IPF predicate (5), for which the participant had to choose one out of a set of pictures in Figure 7.1.

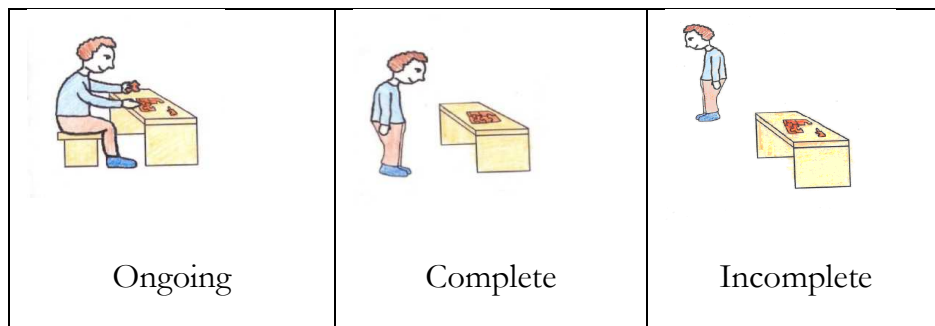


Figure 7.1: Images depicting an event in the three possible scenarios.

The pictures were presented in pairs and in different combinations: complete vs. ongoing –CO condition–, complete vs. incomplete –CI condition– and ongoing vs. incomplete –OI condition–. These different combinations allowed us to better know what the participant’s preferences were for each of the contrasting pairs.

Participants were tested in two sessions, one for PF and one for IPF. The order of sessions was counterbalanced: some participants started with the PF and some with the IPF. 9 items were tested in each of the sessions, three per condition, plus 3 additional control items and two training items.

The following responses were expected:

	Perfective	Imperfective
C-O condition	Complete	Ongoing
C-I condition	Complete	None
O-I condition	None	Ongoing

Table 7.2: Expected responses for the picture-selection task



The results showed that age-group was a significant factor ( $F= 166,042$ ;  $p<.01$ ): children's rate of target responses was lower than adult's both with PF and IPF. Aspect was significant at trend level ( $F= 4,326$ ;  $p=0.055$ ) and the interaction of age-group\*aspect was also significant ( $F= 10,809$ ;  $p<.01$ ): the rate of correct responses for the IPF was lower than for the PF in children as compared to adults. T-tests revealed that subjects performed significantly above chance (chance level: 0.3) for PF (adults:  $t=11.708$ ;  $p<.001$ ; children:  $t=5.657$ ;  $p<.001$ ); for IPF adults performed above chance ( $t=29.103$ ;  $p<.001$ ) but did not differ from chance ( $t= 1.180$ ,  $p>0.1$ )

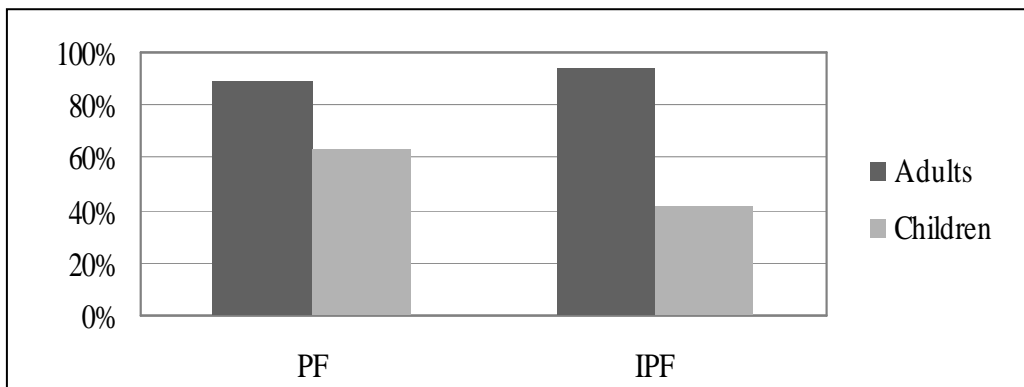


Figure 7.2: Rates of expected responses for PF (complete/none) and IPF (ongoing/none)

As Figure 7.3 shows, adults tended to relate PF to the complete situation and IPF to the ongoing situation, and they rejected to choose a picture in the conditions in which these responses were not an option: their response was 'none' in the OI condition for the PF and in the CI condition for the IPF. Therefore, their responses fitted the expectations (see Table 7.2). Children, as adults, tended to relate PF to the complete picture, except in the 'none' condition, OI condition, where they do not seem to have a clear pattern of responses. In contrast, children's responses for the IPF were not adult-like: they tended to relate IPF to the ongoing and to the complete situation both in the CO condition and in the CI condition where the target answer was 'none'.

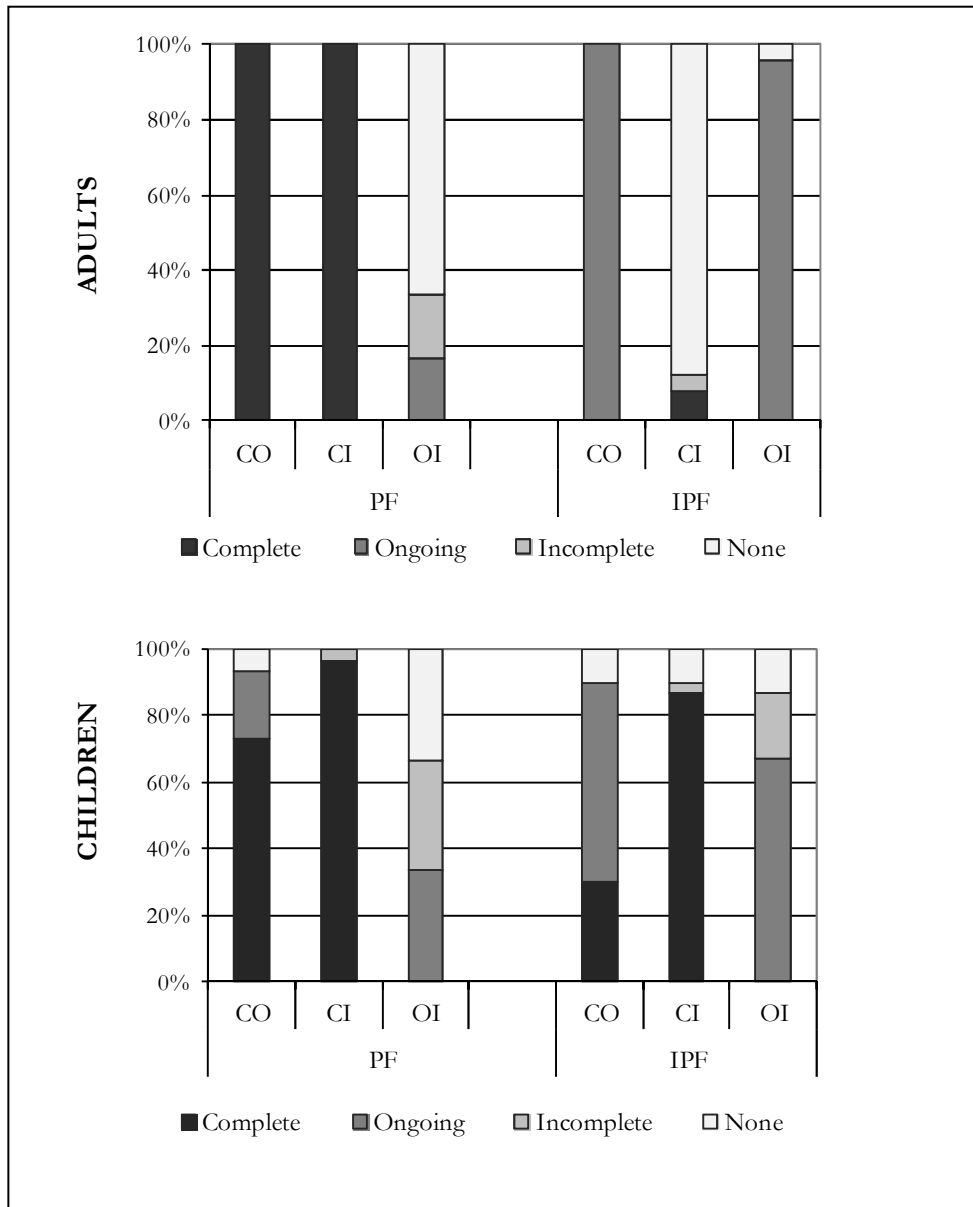


Figure 7.3: Kind of picture chosen in each condition for the PF and IPF by age group.

Therefore, in this experiment adult's responses fitted with the pragmatic uses of grammatical aspect markers: PF was related to complete events whereas IPF was pragmatically enriched, being related exclusively to ongoing events. Children, as adults, tended to relate PF to complete events but their responses for the IPF were not adult-like: they tended to relate the IPF both to complete and ongoing events.

### 7.5.2. Truth-value judgment task<sup>64</sup>

21 monolingual Spanish children (mean age: 5;09; range <5;02-5;11>; 8 males & 13 females) participated in the study. 10 adults were also tested as control group.

In this task, participants watched a short video film in which a clown was performing an action while background music was playing. When the music stopped, one of two different situations was shown: in half of the items the clown had finished the action (complete situation) and in the other half he had not finished (incomplete situation). After showing the videos, a blind-folded puppet uttered a sentence containing a PF –Pretérito Indefinido– (6a) or an IPF –Pretérito Imperfecto– (6b) inflected verb form to try to guess what happened in the video. Subjects’ task was to judge whether the statement was true or false.

- (6) Mientras sonaba la música,  
*While play<sub>PAST,IPF</sub> the music,*  
 a. ... el payaso construyó el puente?  
*...the clown build<sub>PAST,PF</sub> the bridge*  
 b. ... el payaso construía el puente?  
*...the clown build<sub>PAST,IPF</sub> the bridge*

Four conditions were designed. As this task is claimed to check semantic reasoning, according to the Imperfective Paradox (van Hout et al., 2010a) the expected answers were the following (Table 7.3):

SITUATION	GRAMMATICAL ASPECT	CONDITION	EXPECTED ANSWER
Complete	PF	CompP	Yes
	IPF	CompI	Yes
Incomplete	PF	IncP	No
	IPF	Incl	Yes

Table 7.3: Design and target responses for the Aspect Videos Experiment

An ANOVA reveals that aspect ( $F= 124.123$ ;  $p>.01$ ), situation ( $F= 820.935$ ;  $p>.01$ ) and the interaction of aspect\*situation ( $F= 246.908$ ;  $p>.01$ ) are significant. There is

<sup>64</sup> The design was developed within COST A33 (van Hout et al. 2010). For more details on this task, see chapter 5.

no main effect of age group ( $F = .145$ ;  $p > .05$ ) nor is the interaction of aspect\*situation\*age group significant ( $F = 2.782$ ;  $p > .05$ ).

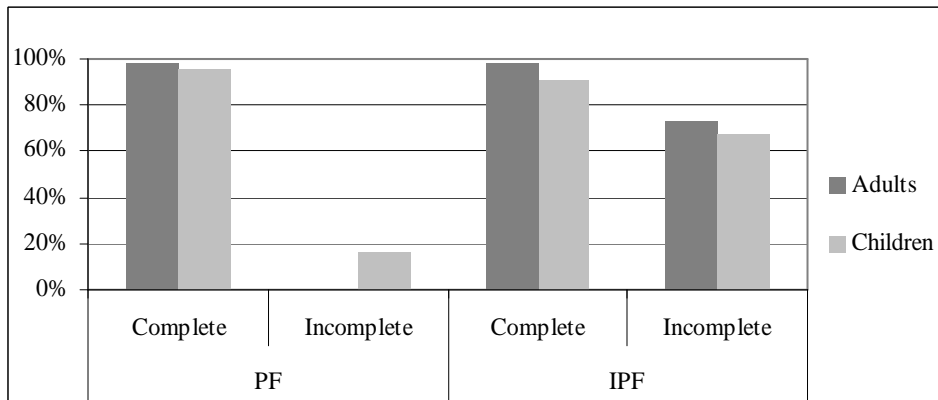


Figure 7.4: Rate of acceptance of each of the conditions by age group

Both adults and children rejected the PF for incomplete situations, showing that even children are aware of the completion entailment of the PF. Additionally, both adults and children accepted IPF to refer to complete and incomplete events.

In this task, adult's pattern of responses for the IPF fitted with the semantic meaning of these forms: given that IPF telic predicates do not entail completion they can, in principle, be related to complete and incomplete events. Children's responses for this task were adult-like.

### 7.5.3. Production task<sup>65</sup>

The production task was a continuation of the truth-value-judgment task, with the same participants and the same materials. Two extra items were shown for each video and verb: one complete and one incomplete event, but this time, children were asked to complete the sentence, in order to tell the blind-folded puppet what had happened in the film:

(7) *Puppet:* Mientras sonaba la música, el payaso...  
*While the music was playing, the clown...*

*Participant:* a. construirPF un puente      COMPLETE SITUATION  
 ...*build-PF a bridge*

<sup>65</sup> The design was developed within COST A33 (van Hout, Gagarina, Dressler et al. 2010). For more details, see chapter 6.

b. construirIPF un puente      INCOMPLETE SITUATION  
 ...*build-IPF a bridge*

To favor the use of the target verbs with aspectual morphology, participants were instructed as the rules of the game not to use infinitives and PF forms preceded by *not completely, partially, try to, intend to, not*, etc. No PF forms were expected to be produced in the incomplete situation. For the complete situation both PF and IPF forms could be produced, in principle, but PF forms were expected, since they entail completion and are, therefore, the most informative.

The production data were coded using four categories: PF, IPF, Other responses and non-valid responses. Non-valid responses are all those cases in which children provided a verb without any aspectual marking –infinitives–, with a wrong temporal value –present or future tense– and no answers (15 % of the total amount of children’s responses; 0% of adults’ responses). The category of PF (23.3% of the total number of children’s responses and 47.5% of adult’s responses) included: Pretérito Perfecto –*ha dibujado* ‘he has drawn’– and Pretérito Pluscuamperfecto forms –*había dibujado* ‘he had drawn’– as well as the past perfective form of Pretérito Indefinido –*dibujó* ‘he drew’–. The IPF category (45.8% of the total amount of children’s responses and 36.7% of adult’s responses) included the occurrences of the past imperfective form of Pretérito Imperfecto –*dibujaba* ‘he was drawing’– and the Progresivo Pasado –*estaba dibujando* ‘he was drawing’–. Forms other than those included under PF and IPF were categorized labelled as ‘other responses’. This category of Other Responses (15.8% of the total amount of children’s responses and 15.8% of adult’s responses) involved verb combinations that make explicit the completion or the lack of completion of the event such as *terminó de dibujar* ‘finish to draw’– or *consiguió dibujar* ‘managed to draw’ for the complete situation, and forms such as *no dibujó* ‘did not draw’ and *no terminó de dibujar* ‘didn’t finish to draw’, *intentó dibujar* ‘tried to draw’ or *quería dibujar* ‘wanted to draw’ as well as atelic alternatives of the verb such as *soplar* ‘blow’ instead of *apagar* ‘blow out’ for the incomplete situation.

Children provided a wider range of responses than adults: ‘other’ responses (5.8% in the complete situation and 25.8% in the incomplete situation) and non-valid responses (9.2% in the complete situation and 20.8% in the incomplete situation) whereas adults only produced ‘other’ responses in the incomplete situation (31.7%).

Taking into account only the PF and IPF forms produced, Figure 7.5 shows that the patterns of use for the PF and IPF forms vary as in which situation each form has been used.

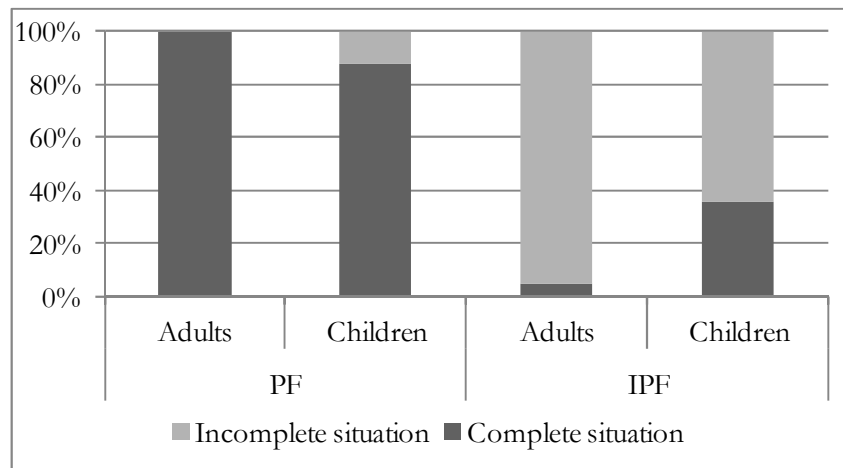


Figure 7.5: Rates of PF and IPF production by situation and age group

Both children and adults used mainly PF for the complete situation and, crucially, neither group used PF to describe incomplete situations, showing once again that participants are aware of the completion entailments that rise from the use of PF with telic predicates. Wilcoxon tests comparing the number of PF and IPF responses for complete and incomplete situations revealed that PF is used significantly less in the incomplete situation than in the complete situation by both groups: adults ( $Z=-2.970$ ;  $p<.05$ ) and children ( $Z=-3.346$ ;  $p<.05$ ). However, there is a difference in the use of IPF between adults and children. Whereas adults used IPF almost exclusively in the incomplete situation and hardly ever in the complete situation ( $Z=-2.529$ ;  $p<.05$ ), children seemed to use the IPF form indistinctively for both complete and incomplete situations ( $t=-1.100$ ;  $p>.05$ ).

## 7.6. DISCUSSION

The present study is aimed to check whether truth-value-judgment tasks involve pure semantic reasoning and picture-selection tasks and elicited production tasks involve pragmatic reasoning. For doing so, adults and five-year-olds were tested in three different tasks: a picture-selection task, a truth-value judgment task and an elicited-production task.

If truth-value-judgment tasks –which requires checking whether an interpretation is possible– were related to semantic reasoning<sup>66</sup>, we expected adults to relate PF to complete events and IPF to complete and incomplete events. If the picture-selection task –which requires selecting which is the most appropriate interpretation of a given form–, and the elicited production task –which requires to select which is the most appropriate form to describe a situation– involved pragmatic reasoning, we expected adults to pragmatically enrich the meaning of the IPF by generating the scalar implicature that IPF implies lack of completion, thus linking the IPF only to incomplete or ongoing events. Given that, in other domains of language, such as quantifiers, definite and indefinite articles, conjunctions, etc. (Dowty, 1979, Pouscoulous et al., 2007, a. o), children at the age of five are claimed to have already acquired semantics of the forms but they fail to derive scalar implicatures, we expected children to provide semantic responses –relating IPF both to complete and incomplete events– across tasks, being their performance adult-like in the truth-value-judgment task, which involves semantic reasoning, but not in the picture-selection task and the elicited production task, which involve pragmatic reasoning.

Adults' responses in the different tasks confirmed the predictions. In the truth-value-judgment tasks adults accepted PF for complete events and IPF for both complete and incomplete events as, according to the Imperfective Paradox (Olsen,

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<sup>66</sup> Truth-value judgment tasks should be distinguished from felicity judgment tasks or utterance-judgment tasks (Katsos and Bishop, 2011). Though similar in their procedure these task are different in their objectives. The former tasks ask whether a statement is true or false while the latter ask whether the utterance is appropriate, 'good or bad'.

1997) telic PF predicates semantically entail completion but telic IPF predicates do not. In the picture-selection task and the elicited-production tasks adults associated the IPF to ongoing or incomplete events, what matches with the pragmatic use of IPF, to the scalar implicature that, as the stronger, more informative PF was not used, IPF is used because completion was not reached or was not attested by the speaker (Dowty, 1979, Smith, 1991).

As expected, differences between age groups only arose in the tasks that involve pragmatic reasoning. In the truth-value-judgment task children's performance was adult-like: children accepted the PF for complete situations and rejected PF for incomplete situations, showing that they have acquired the semantics of grammatical aspect and they know that telic PF predicates entail completion but telic IPF predicates do not, according to the Imperfective Paradox (Noveck, 2000). However, adults' and children's responses were different in the picture-selection task: children, like adults, predominantly chose complete events for PF, but for the IPF children chose pictures both depicting ongoing and complete events unlike adults, who chose the ongoing picture almost exclusively. Children's responses were also non-adult-like in the elicited production task: children overproduced imperfectives in the complete situation while adults only used IPF for the incomplete situation and almost never for the complete situation. Thus, children's responses were not adult-like in the tasks that involve pragmatic reasoning because their responses were taking into account the semantic meaning of the IPF and not the pragmatic use of IPF when it is pragmatically enriched to imply lack of completion. The fact that children behaved adult-like in the first task but provide non-adult-like responses in the two latter tasks can be interpreted as evidence that at this age children have acquired the semantics of grammatical aspect but do not yet master the pragmatic use of these forms in line to what has been found in the acquisition of other domains of language in previous literature for 5 year-olds (van Hout, 2005, a.o.).

The differences between the truth-value-judgment task, on the one hand, and the picture-selection task and the production task, on the other hand, connect to methodological issues regarding the previous literature on the acquisition of grammatical aspect. As shown in Table 7.1, , different kinds of methods have been



used to test children's knowledge of grammatical aspect: forced one-to-one sentence-to-scene matching tasks, sentence-to-scene matching tasks, picture selection tasks and elicited production tasks. There are crucial differences on the kind of responses adults and children provided for the IPF in each of these methods. As in our study, in other picture-selection tasks (2003, van Hout, 2007a, 2008) and elicited-production tasks (Kazanina and Philips, 2003, Vinnitskaya and Wexler, 2001) adults tended to relate the IPF to incomplete or ongoing events – providing what we would call a *pragmatic response*– whereas children related IPF both to complete and incomplete events –providing what we would call a *semantic response*–. Similarly, in other truth-value judgment tasks (Kazanina and Philips, 2007, 2001) both adults and children related IPF to ongoing and complete events –*semantic response*–.

In sentence-to-scene matching tasks adults provided different kinds of responses. In these tasks, participants were given two situations –a complete and an incomplete or ongoing one– and two forms –PF and IPF– and were asked to match each of the forms with one of the situations. On the one hand, Vinnitskaya & Wexler (1991) and Weist et al. (1998, 1984) report in their studies that children's responses for the IPF were above chance: children as young as three related the IPF to ongoing events –*pragmatic response*–; however, their report of the results is not too detailed and, since no adults were tested, we do not know if this above-chance performance is adult-like. On the other hand, Wagner (2007, 2002) tested adults in two different ways: first they had to match only one sentence at a time to the complete or the incomplete situation (so the method was one-form-to-one-situation); later, they were given the two sentences and had to match each sentence to each of the situations (so the method was two-forms-to-two-situations). In the second kind of testing only first matches were coded. Responses where different in each of the situations: for the first testing adults related the IPF to complete and incomplete events indistinctively –*semantic response*–; for the second testing, in which the two forms were explicitly contrasted, adults consistently related the IPF only to incomplete events –*pragmatic response*–. Children were tested with the second kind of testing (two forms to be matched to two situations), but still five year-olds'

performance fitted that of adults' performance in the first testing: they matched the perfective sentence to the completed event and the IPF to complete and incomplete events –*semantic response*–. Kazanina and Philips (1989, exps. 1 & 2) used a different task to test children's comprehension of grammatical aspect in Russian. They used a sentence-to-situation matching task in which participants had to relate PF and IPF forms to a complete, an incomplete and a non-started action. A PF or IPF form was given to the participant and they had to choose which situation better fitted the description; however, participants were encouraged to relate the form to more than one situation. Adults related IPF both to complete and incomplete events –*semantic response*– while children failed into two groups: an adult-like group which provided the same responses as adults –*semantic response*– and a group that tended to choose only the complete location for the IPF

So, as a summary, children related IPF to complete and incomplete events, even in those tasks in which adults related IPF only to complete events, providing a semantic response even in the tasks in which some pragmatic reasoning was demanded. Thus, non-adult-like behaviour in previous studies using forced sentence-to-scene matching task, picture-selection tasks and elicited production tasks do not reflect an incomplete acquisition of the semantics of IPF but children's failure to derive SIs with IPF.

There are two different approaches to account for the phenomenon of scalar implicatures and their acquisition. The Neo-Gricean approach to scalar implicatures (Grice, 1989, Levinson, 2000) presumes that both speaker and hearer follow the maxims of conversation (Sperber and Wilson, 1994): when the speaker chooses to utter a sentence with the weak term, the IPF, the hearer may infer that the speaker has not enough evidence to use the stronger element in the scale, the PF, or knows that the information conveyed by the stronger term –completion– does not hold. Thus, by pragmatic enrichment the use of the weak term (IPF) is automatically interpreted as the negation of the strong term (PF), implying lack of completion. Under Relevance Theory (Noveck, 2004), scalar implicatures 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 scalar implicatures does not depend on the meaning of the forms, but on the contexts of the utterance. In principle, both the Neo-Gricean and the Relevance Theory approaches to scalar implicatures can explain children's difficulties (Grinstead et al., 2009b). Under the Neo-Gricean approach, it could be claimed that scalar implicatures become automatic with age and children's initial limitations in drawing scalar implicatures are due to maturing effects. On the other hand, under Relevance Theory, children and adults use the same mechanisms for comprehension, but greater cognitive resources are available for adults that help them to draw out more pragmatic inferences.

Scalar implicature for the IPF do not arise in all contexts. When the IPF is used to convey background information (8) scalar implicatures are not drawn. This is not the case for numerals or quantifiers, where SIs are generated more automatically

- (8) *María se estaba comiendo/ comía la sopa cuando llegué*  
*María SE beIPF eating /eat.IPF the soup when I arrived*  
 'María was eating the soup when I arrived'

The fact that the generation of the implicature in the case of grammatical aspect depends is more compatible with the Relevance Theory approach than the Neo-Gricean approach. However, the conditions for the generation of the implicatures for the IPF need a more detailed study from a theoretical point of view and from the perspective of empirical studies on adults.

Nevertheless, the conclusion of this section, namely that some of the tasks used for testing grammatical aspect involve semantic reasoning while some others involve pragmatic reasoning, is crucial for the research of child language, given that for each of the tasks testing grammatical aspect we have to check which kind of reasoning is under testing semantics or pragmatics to generate the proper conclusions about children's knowledge.

## 7.7. CONCLUSION

The present study compared adults' and children's comprehension and production of Spanish grammatical aspect markers in three different tasks: a picture-selection task, a truth-value judgment task and an elicited production task. We hypothesized

that these tasks involve different kinds of reasoning: the truth-value-judgment task induces pure semantic reasoning while the picture-selection and elicited production tasks involve pragmatic reasoning and, more specifically, the derivation of a scalar implicature.

In the truth-value-judgment task adults related telic PF predicates exclusively to complete events and telic IPF predicates to complete and incomplete events, in accordance to the semantic properties of these forms as described by the imperfective paradox: PF telic predicates entail completion whereas IPF telic predicates do not. Children's responses were adult-like for the truth-value-judgment task confirming that children have indeed acquired the semantics of aspect at five years of age: they are aware of the completion entailments that arise when telic predicates are marked with PF and of the lack of such entailments for IPF.

However, children's results were not adult-like for the IPF in the picture-selection task or the elicited production task. Crucially, in these tasks adults related IPF only to ongoing or incomplete events, pragmatically enriching the semantic meaning of IPF by generating the scalar implicature that IPF is used instead of PF because completion did not take place. Thus, children's non-adult-like responses in these tasks can be attributable to a failure in the derivation of the scalar implicature associated to the use of IPF morphology in certain contexts, in accordance to what has been found at this age in the literature in other domains like quantifiers, numerals, definite and indefinite articles, etc. (Noveck, 2000; Pouscoulous et al., 2007; van Hout et al., 2010b). The asymmetries between adults and children in our experiments partially coincide with the ones reported in previous literature on the acquisition of grammatical aspect (Table 7.1).

## GENERAL DISCUSSION

The studies presented in this dissertation contribute novel experimental data of adults' and 5-year-old children's comprehension and production of tense and aspect marking in Spanish, a language which has a rich tense and aspect verb inflectional system and whose acquisition has not been widely studied with experimental methods (with the exception of Hodgson, 2003, Hollebrandse et al., 2010). Thus, a comprehensive set of experiments has been developed, 1) testing comprehension and production using different tasks, 2) focusing on different kinds of forms – synthetic vs. periphrastic T-A forms— which are defined in terms of morphological complexity and the degree of polysemy 3) and including different kinds of predicates —continuous vs. iterative verbs and incremental-theme vs. change-of-state predicates—. The results of experiments have been contrasted and interpreted with respect to the previous literature on the acquisition of tense and aspect and with respect to the different analyses of tense and aspect in linguistic theory.

The studies presented in this dissertation aim to answer the following research questions:

- 1) Do 5 year-old children distinguish predicational aspect, grammatical aspect in a language with a rich temporal-aspectual verbal paradigm like Spanish?
- 2) Do the following factors affect the interpretation and use of tense and grammatical aspect marking?
  - a) The morphological complexity and the degree of polysemy of the forms;
  - b) The nature of the predicational aspect of the predicate;
  - c) The discourse context: whether there is narrative context or the sentence is given out of the blue, and whether an explicit Reference Time RefT is given;

- d) The kind of task: production versus comprehension; truth-value judgment versus picture selection.
- 3) Do these factors affect adults and 5-year old children in the same way?

Three sets of experiments were carried out with these goals:

- TENSE MOVIES EXPERIMENT. Two different tasks were designed for a uniform set of video-clips: a sentence-to-situation matching task to test the comprehension of past, present and future IPF tenses and a sentence completion task to test the production of past, present and future situations (chapter 3).
- ASPECT CURTAINS EXPERIMENT. A picture-selection task was designed to test the comprehension of past PF vs. IPF sentences in a short narrative and out-of-the-blue context (chapter 4 & 7)
- ASPECT MOVIES EXPERIMENT. Two different tasks were designed using a uniform set of video-clips: a truth-value judgment task to test the comprehension of past PF vs. IPF (chapter 5, 6 & 7) and a sentence completion task to test the production of past PF and IPF (chapter 6 & 7)

In order to test children's understanding of tense and aspect categories independently, the tense value was maintained constant (past value) in the grammatical aspect experiments, while the aspect value of the predicates (IPF atelic predicates) was maintained constant in the TENSE MOVIES. Additionally, in order to test the influence of the kind of form, both synthetic and periphrastic forms were tested in the ASPECT MOVIES EXPERIMENT and the TENSE MOVIES EXPERIMENT, while only synthetic forms were tested in the aspect curtains experiment. Table 8.1 shows the selection of Spanish forms used in the tests:

	MORPHOLOGY	GRAMMATICAL ASPECT	TENSE
TENSE MOVIES EXPERIMENT	Synthetic	IPF	PAST. <i>Pretérito imperfecto</i> PRESENT. <i>Presente simple</i> FUTURE. <i>Futuro simple</i>
	Periphrastic	IPF	PAST. <i>Progresivo pasado</i> PRESENT. <i>Progresivo presente</i> FUTURE. <i>Progresivo futuro</i> FUTURE. <i>Perífrasis prospectiva.</i>
ASPECT. CURTAINS EXPERIMENT	Synthetic	PF. <i>Pretérito imperfecto</i> IPF. <i>Pretérito indefinido</i>	PAST
ASPECT MOVIES EXPERIMENT	Synthetic	PF. <i>Pretérito imperfecto</i> IPF. <i>Pretérito indefinido</i>	PAST
	Periphrastic	PF. <i>Pretérito perfecto</i> IPF. <i>Progresivo pasado</i>	PAST

Table 8.1: Tense and aspect forms across experiments

The participants of the experiments were 30 adults and 64 five-year-old children distributed in two groups: one performing the ASPECT CURTAINS EXPERIMENT, and one performing the ASPECT MOVIES EXPERIMENT and the TENSE MOVIES EXPERIMENT.

The age of the children was constant: around 5 years of age, which is the age at which language studies in other domains of language show that most of the morphology, syntax and semantics are already acquired but there are some other areas of language that children haven't yet mastered, such as pragmatics. Additionally, studies on the acquisition of tense and aspect have shown that children's performance with tense and aspect distinctions improves at this age (Weist et al. 1991, 1997; Wagner, 1997, 1998, 2001; van Hout & Hollebrandse, 2001) but there are still non target-like responses (Wagner 2001, 2002; van Hout & Hollebrandse, 2001; Hodgson, 2003; van Hout, 2004, 2005, 2007, 2008; Kazanina & Philips, 2007). Therefore, we expected 5-year-olds to have already acquired the basic semantics of tense and aspect and to be able to recognize and properly use the markers for the main distinctions within these levels.

We will present the results of the different experiments in relation to the predictions presented in the Introduction chapter.

#### PREDICTION 1:tense

The children tested in this experiment were 5-year-olds, so since they were relatively old, we expected them to properly understand the basic distinctions at the level of TENSE: past vs. present vs. future.

The results of the TENSE MOVIES EXPERIMENT in chapter 3 confirmed that children at the age of 5 distinguish past, present and future forms and use them properly to refer to past, present and future situations.

#### PREDICTION 2: grammatical aspect

At the level of grammatical aspect, we expected 5-year-old children to be aware of the differences between PF and IPF aspect, namely that PF telic predicates entail completion whereas telic IPF predicates do not. Additionally, as, according to the literature, the IPF is acquired later than the PF, we predicted that, in case of differences between adults' and children's responses, these should appear with the IPF rather than with the PF.

In the ASPECT MOVIES EXPERIMENT (Chapter 5) children distinguished PF and IPF forms and showed that they know that telic predicates marked with PF entail completion and telic predicates marked with IPF do not, since they correctly rejected PF for incomplete situations and accepted IPF for both complete and incomplete situations.

However, children's performance was not always adult-like, since differences arose in the comprehension and production of grammatical aspect, and more specifically of IPF aspect, in some specific tasks (picture-selection task vs. elicited-production tasks) and experimental conditions (narrative context vs. out-of-the-blue context). First, differences were found between adults and children in the comprehension of IPF aspect in the ASPECT CURTAINS EXPERIMENT presented in chapter 4, especially in the narrative context: adults generally related PF almost exclusively to complete



events and IPF to ongoing events, whilst children tended to relate the PF to complete events and the IPF to complete and ongoing events. Second, differences were found across tasks. While in some comprehension tasks (the truth-value judgment task of the ASPECT MOVIES EXPERIMENT and the sentence-to-situation matching task of the TENSE MOVIES EXPERIMENT) children's comprehension was adult-like, their production was different from adults'. In the production task of the ASPECT MOVIES EXPERIMENT (chapter 6) children provided a wider range of responses than adults, including IPF forms for complete situations, as opposed to adults, who produced PF forms almost exclusively when the action was completed. Similarly, in the TENSE MOVIES EXPERIMENT no big differences were found between adults and children in tense encoding, but, at the level of grammatical aspect, children produced both perfective and imperfective forms for the past situation whereas adults only produced perfective forms.

### PREDICTION 3: morphological complexity and degree of polysemy of the forms

Crosslinguistic differences have been found in children's comprehension of tense and grammatical aspect (1973, van Hout, 2008, van Hout et al., 2010a, Weist et al., 1991, Weist et al., 1984). These differences have been linked, among other factors, to differences in the morphological configuration of tense and grammatical aspect information of the forms in the different languages, and the transparency and the degree of polysemy of the different forms.

Spanish has a rich tense and aspect verb inflectional system, which makes it an ideal language to test whether the morphological complexity or the degree of polysemy of the forms are factors that influence children's acquisition of tense and aspect.

According to Table 3.2, tense and aspect forms in Spanish vary in a) their tense value; b) their aspect value; c) their degree of polysemy and d) in their morphological complexity.

LABEL	EXAMPLE	TENSE VALUE	ASPECT VALUE	MEANING	MORPHOLOGICAL COMPLEXITY
Pretérito indefinido	<i>Bailó</i>	Past	PF	<u>Perfective</u> : Ingressive Terminative	Synthetic
Pretérito perfecto	<i>ha bailado</i>	Past	PF	<u>Perfect</u> Experiential Resultative	Periphrastic
Pretérito imperfecto	<i>bailaba</i>	Past	IPF	<u>Imperfective</u> Progressive Habitual Continuous Dislocated use: irrealis	Synthetic
Progresivo pasado	<i>estaba bailando</i>	Past	IPF	<u>Imperfective</u> Progressive	Periphrastic
Presente simple	<i>baila</i>	Present	IPF	<u>Imperfective</u> Progressive Habitual Continuous Near future	Synthetic
Progresivo presente	<i>está bailando</i>	Present	IPF	<u>Imperfective</u> Progressive	Periphrastic
Futuro simple	<i>bailará</i>	Future	Neutral	<u>Neutral</u> Progressive Inchoative Terminative Dislocated use: epistemic	Synthetic
Progresivo future	<i>estará bailando</i>	Future	IPF	<u>Imperfective</u> Progressive Dislocated use: epistemic	Periphrastic
Perífrasis prospectiva	<i>va a bailar</i>	Future	Neutral	<u>Neutral</u> Progressive Inchoative Terminative	Periphrastic

Table 8.2: Classification and properties of Spanish verbal inflections.

Synthetic and periphrastic forms were compared in the ASPECT MOVIES EXPERIMENT and the TENSE MOVIES EXPERIMENT.

Following Slobin's (1973) Unifunctionality Principle (9), according to which children favour one-to-one form-to-meaning mappings, we expected children's performance to be more adult-like with periphrastic forms, given that in periphrastic forms aspectual information is marked in the verb while tense is marked in the auxiliary,

whereas in synthetic forms tense and aspect information is conflated in the same morpheme.

(9) Operating Principle of Unifunctionality(Hollebrandse et al., 2010: 1228):

If you discover that a linguistic form expresses two closely related but distinguishable notions, use available means in your language to distinctly mark the two notions.

Additionally, according to the Informativeness hypothesis (Hollebrandse et al., 2010) in (10), which predicts that polysemy slows down the acquisition process, we expected children's performance to be more adult-like with IPF periphrastic forms than with IPF synthetic forms given that periphrastic forms carry only one specific meaning whereas PF forms carry more than one meaning.

(10) Informativeness hypothesis(Ramchand, 2008)

If two or more temporal forms compete for the same temporal meaning, children perform better on the most informative one, the one with less degree of polysemy, the one that is most specific.

The results in the TENSE MOVIES EXPERIMENT presented in Chapter 3 and the ASPECT MOVIES EXPERIMENT presented in Chapter 5 showed that there are no significant differences in the comprehension of tense and grammatical aspect morphemes between the different forms. So, neither of the two hypotheses can be confirmed. This might be because the children, who were 5, had already acquired the meaning of the different forms: they were too old to test these hypotheses.

Yet, differences between adults and children were found in production in relation to the kind of form. In the production task of the TENSE MOVIES EXPERIMENT(Chapter 3) and the ASPECT MOVIES EXPERIMENT (Chapter 6) children preferred periphrastic forms over synthetic forms and especially the *progresivo pasado* over the *pretérito imperfecto*. Adults, in contrast, tended to produce forms of the same kind as the ones used earlier in the comprehension part of the experiment (the comprehension task preceded the production task in both the TENSE MOVIES EXPERIMENT and the ASPECTMOVIES EXPERIMENT).

Children might prefer the *progresivo pasado* over the *pretérito imperfecto* because the former establishes one-to-one morpheme-to-meaning mappings and is monosemous, whereas the latter establishes one-to-many morpheme-to-meaning mappings and is polysemous. However, the fact that in the experiments comprehension preceded production makes it difficult to determine whether the adult-pattern really shows the adults' preferences, or instead reflect adults' willingness to be collaborative in the task by using the forms they had been primed for just before. In fact, in certain conditions in the ASPECT MOVIES EXPERIMENT (for incomplete situations with change-of-state verbs) adults also avoided the use of the *pretérito imperfecto*. To find out whether adults' responses reflect their preferences or were influenced by the comprehension task, an elicited production task could be repeated in isolation.

#### PREDICTION 4: the nature of the predicational aspect

According to the literature, children have more difficulties in attaining telicity when it depends on the object (van Hout, 1998). Therefore, if there are differences between adults and children, we expected them to appear with incremental-theme predicates (whose telicity is dependent on the object) and not with change-of-state predicates (whose telicity is dependent on the result phrase).

In the ASPECT MOVIES EXPERIMENT presented in Chapters 5 and 6 we tested children's comprehension and production of grammatical aspect with two different kinds of telic predicates: change-of-state predicates and incremental-theme predicates which differ in duration and in the way telicity is generated. On the one hand, incremental-theme predicates are durative while change-of-state predicates are not. This affected the way these two kinds of predicates were represented in the movies in the incomplete situation: incremental-theme predicates were represented as showing the beginning of the event and a process leading to a result which was not fulfilled (i.e. the event of building a bridge half way), while change-of-state predicates were represented as attempts to perform an action (i.e. attempts at opening a jar) but without showing any progress. On the other hand, according to Ramchand (1998), change-of-state predicates involve two subevents: the process

subevent and the result subevent; telicity in these kinds of predicates is semantically implied by the result subevent. In contrast, telicity in incremental-theme predicates is derived from the characteristics of the object, the boundedness of the theme, through a quantity implicature that establishes that the whole path was affected and thus the event was completed (see chapter 1 section 2.3 for more detail). Different languages lexicalize these subevents in different ways. For example, the Spanish verb *apagar* 'blow' lexicalizes the meaning of the process and the result, while in English the verb *blow* lexicalizes the process and the particle *out* refers to the result state. Same happens with other particle verbs such as *eat up*, *cut out*, etc.

Differences between the two kinds of predicates were found in the ASPECT MOVIES study. First, in the comprehension of the completion entailments that are generated when telic predicates are combined with the PF, change-of-state predicates yielded more adult-like answers than incremental-theme predicates. Children almost always rejected PF for incomplete events (97%) when the events corresponded to change-of-state predicates, but significantly less often (70-75%) with incremental-theme predicates. Thus, it seems that for children telicity is more difficult to assess with change-of-state predicates than with incremental-theme predicates. Additionally, differences between change-of-state predicates and incremental-theme predicates were also found in the comprehension of IPF. IPF incremental-theme predicates were usually accepted as descriptions of incomplete events; a response that is consistent with the Imperfective Paradox and the cancelation of completion entailments of IPF predicates. However, IPF change-of-state predicates were sometimes rejected both by adults and children in the incomplete condition. Similarly, in production IPF change-of-state predicates were often avoided when describing incomplete events; other forms were used instead, such as negated perfective, atelic predicates, and verb compounds such as *tried to*, *wanted to*, etc.

The differences between adults and children in the comprehension of PF can be related to the two ways in which telicity is derived in the two types of predicates. For change-of-state predicates telicity is derived semantically by a result phrase while for incremental-theme predicates telicity is derived pragmatically through a conversational implicature that implies that the whole object has been affected.

Another possible explanation for the differences between change-of-state predicates and incremental-theme predicates is related to durativity and how these two different kinds of predicates were represented for the incomplete condition in the movie clips. Incremental-theme predicates have duration and were represented as a process leading to completion of the event but without a result event. In contrast, change-of-state predicates lack duration and were represented in the videos as failed attempts. It may be the case that PF change-of-state predicates are easier to reject than PF incremental-theme predicates, because the latter are portrayed in the videos as lack of completion but the former are portrayed as a lack of the action altogether. If children were rejecting the PF predicate with change-of-state predicates because they interpreted that the action did not occur, they should also reject IPF change-of-state predicates for incomplete events, which they actually did sometimes, in contrast to incremental-theme predicates, which were widely accepted with IPF. Thus, it might be the case that children do not understand telicity and are rejecting PF change-of-state predicates, not because these predicates are telic, but because no event is shown in the videos for the incomplete situation.

Further research is needed to study the acquisition of predicational aspect in order to distinguish whether children's difficulties with incremental-theme predicates found in this study are related to two different ways of generating telicity – semantically or through a quantity implicature– or to the different ways these predicates were represented in the video clips. First, to test whether telicity is derived pragmatically or semantically with incremental-theme predicates, it would be interesting to test whether children comprehend incremental-theme predicates differently when a measure phrase is added, by contrasting sentences such as (11) or (12):

- (11) a. El niño comió la manzana  
*The boy eatPF the apple.*  
 'The boy ate the apple'
- b. El niño comió media manzana  
*The boy eatPF half apple*  
 'The boy ate half an apple'

- (12) a. El niño bebió el zumo  
*The boy drink<sub>PF</sub> the juice.*  
 ‘The boy drank the juice’
- b. El niño bebió medio vaso de zumo  
*The boy drink<sub>PF</sub> half glass of juice.*  
 ‘The boy drank half a glass of juice’

All in all, the fact that children’s rejection rates of the PF were somewhat lower for incremental-theme predicates than for change-of-state predicates indicates that, on the one hand, children are aware of the generation of completion entailments of the PF with telic predicates, given that they do reject them with change-of-state predicates; and on the other hand, that telicity distinctions are not firmly comprehended by children, especially when telicity is derived pragmatically through the boundedness of the object of the predicate, in line with van Hout (1979).

This latter conclusion is very important for interpreting the results of previous studies on the acquisition of grammatical aspect. Most of the studies on the comprehension of grammatical aspect make use of the properties of the Imperfective Paradox (van Hout, 2005) to assess children’s knowledge of grammatical aspect marking. However, to correctly comprehend the Imperfective Paradox, children must master knowledge at the two levels of aspect: at the level of grammatical aspect they have to be aware of the distinction between PF and IPF forms and at the level of predicational aspect they must be able to derive the telicity of the predicate. The kind of predicates most commonly used are incremental-theme predicates because they have duration and this is crucial for depicting an ongoing action in a picture. However, our study shows that children have difficulties assessing telicity with this kind of predicates. Since in previous studies children’s knowledge of telicity was taken for granted, children’s failure to understand completion entailments with this kind of telic predicates could have been wrongly attributed to an incomplete acquisition of grammatical aspect instead of to misunderstandings at the level of predicational aspect in previous literature.

PREDICTION 5: semantic complexity vs. discourse integration

In terms of the event-based theories, children's non-adult-like understanding of telic IPF predicates has been attributed, (a) to difficulties at the semantic level in applying the semantic shift of the telic predicate into an homogenous predicate, as imposed by the IPF (2007, van Hout, 2007a), or (b) to difficulties at the discourse level in establishing the proper anaphoric temporal reference for the IPF (2005, van Hout, 2007b, van Hout, 2008).

To test if children's understanding of IPF is hindered by (a) or (b) two different experimental settings were designed in the ASPECT CURTAINS EXPERIMENT: a narrative setting and an out-of-the-blue setting. The rationale was the following: if problems with IPF were related to difficulties in applying the aspect shift imposed by IPF (a), we expected to find the same pattern of responses for the two experimental settings; if problems with IPF were related to discourse integration (b), we expected to find non-adult-like comprehension of IPF only in the narrative context, but not in the out-of-the-blue context.

Results in Chapter 4 showed that 5 year-old children's accuracy in the out-of-the-blue setting was above chance while children's accuracy with the IPF was at chance in the narrative setting. This suggests that children's difficulties in understanding IPF are related to the anaphoric linking of the IPF in the discourse (van Hout, 2005, van Hout, 2007b) rather than to difficulties at the semantic level in applying aspectual shift or coercion (2003, van Hout, 2008): children know the semantics of the IPF, but not how to integrate IPF sentences in a discourse. Therefore, the ASPECT CURTAINS EXPERIMENT showed that children are sensitive to the discourse properties of the experimental setting and that they are not accurate in properly identifying the relevant temporal antecedent for the IPF.

A similar conclusion was reached by Kazanina & Philips (2007) though in relation to whether the RefT is explicit or implicit in the discourse: when the Ref was made explicit in the discourse, children's performance with the IPF was adult-like; when the RefT time was not explicit, non-adult-like performance was found for some children. Taking this observation into account, in the ASPECT MOVIES EXPERIMENT,



an RefT was made explicit in the test sentence to facilitate the task of comprehending the IPF. Children's comprehension of IPF in the ASPECT MOVIES EXPERIMENT was adult-like, in line with Kazanina & Philips (2003, 2007).

However, the inclusion patterns of the event and the explicit RefT in our experiment and in Kazanina & Philips' (2003, 2007) experiment were different: in the ASPECT MOVIES EXPERIMENT the explicit *while*-clause included the whole event in the main clause, so the completion of the event or the failure was visible within the *while*-clause interval (see Figure 8.1). In Kazanina & Philips' (2003) experiments the action in the *while*-clause finished before the completion or the failure of the event happened (see Figure 8.2):

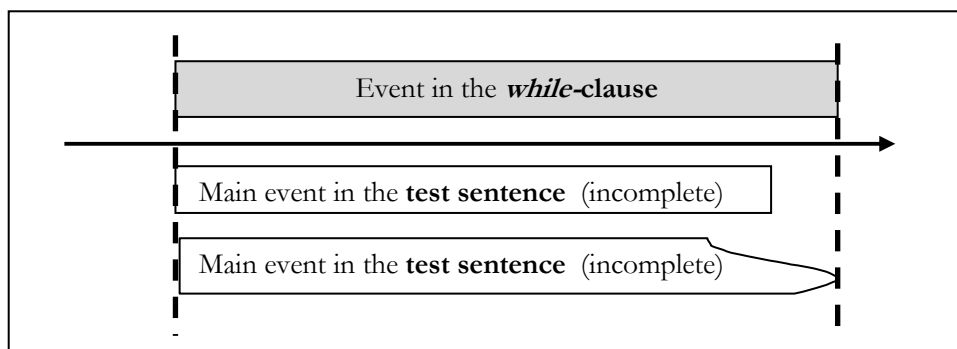


Figure 8.1: Inclusion patterns of the event in the *while*-clause and the event in the main clause in the ASPECT MOVIES EXPERIMENT

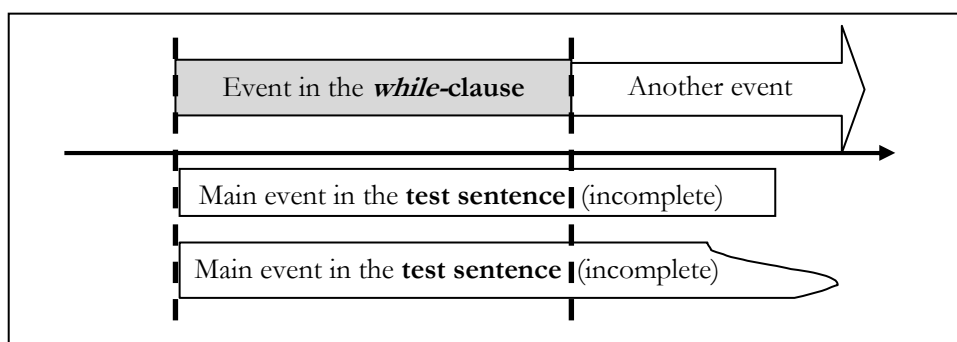


Figure 8.2: Inclusion patterns of the event in the *while*-clause and the event in the main clause in (Kazanina and Philips, 2007)

This difference is crucial. Kazanina & Philips (1979, 2003) account for the Imperfective Paradox by adopting an intensional approach based on Dowty (1992) and Landman (2007). They propose that IPF is true in a discourse if there is some other possible world in which the event would have finished. This inertia world

coincides with the actual world up to the endpoint of the RefT. Thus, for the inertia world to be projected, the RefT cannot contain the failure point of the event. To explain children's non-adult-like performance when no explicit RefT was provided, Kazanina & Philips (2007) claim that children evaluate IPF using a default RefT that includes the event failure and, thus, some children related IPF sentences only to complete situations and not to the incomplete situation. In contrast, adults related IPF sentences to both complete and incomplete situations and they did so because they can take an insider perspective on the RefT, selecting a subinterval to validate the IPF that excludes the failure point.

Comprehension results of our experiment show that Spanish children at the age of 5 are able to take an inside perspective on the time interval in the *while*-clause, accepting IPF to refer to incomplete events, in contrast to what Kazanina & Philips (1989, 2003) claim Russian children are doing in the absence of an explicit RefT. However, like Russian children, they are still not able to select the proper antecedent for the IPF when the RefT is not explicit in the discourse, as shown in the ASPECT CURTAINS EXPERIMENT.

The fact that children can take an insider perspective over the temporal interval denoted by the *while*-clause also affects production. Non-adult-like use of IPF aspect was found in the ASPECT MOVIES EXPERIMENT (chapter 6) and in the production data for the past in the TENSE MOVIES EXPERIMENT: children used IPF to describe complete events whereas adults used PF for complete or finished events. Similarly to what happens in incomplete situations, the use of IPF for a complete situation is another instance of the use of IPF to take an insider perspective on the event in which only part of the interval denoted by the *while*-clause is selected: the interval during which the action was ongoing previous to its completion. In contrast, for the PF the RefT is equivalent to the whole interval of music playing or at least to a subinterval that contains the completion point (see Figure 8.3).

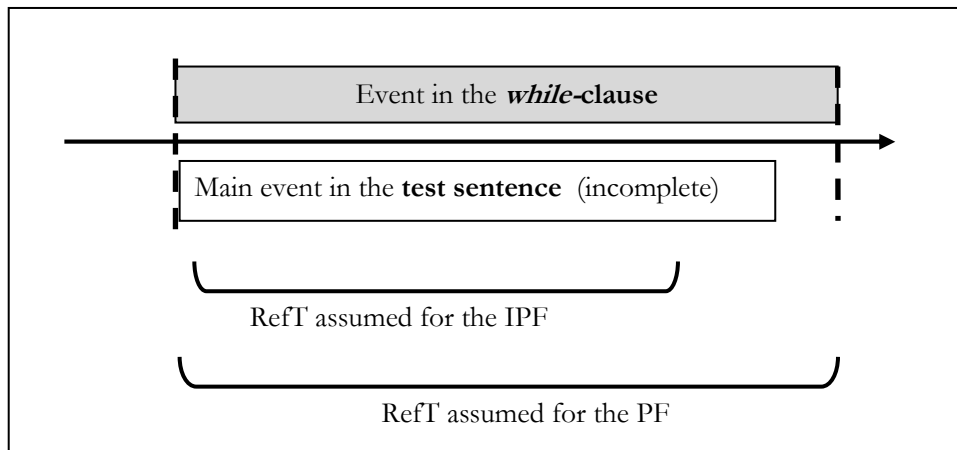


Figure 8.3: Schemas for the interval Spanish PF and IPF morphemes make reference to.

Therefore, children's uses of IPF for the complete situation instead of PF could be due, once again, to the fact that children were assuming a different RefT than the one adults interpreted to be relevant in the experimental setting: adults assumed the maximal interval of the *while*-clause, thus producing PFs whereas children apparently did not. Using an IPF for a complete situation is underinformative because it does not make an assertion about the maximal interval of the event denoted by the *while*-clause. Such underinformative use in the context of this experiment violates Gricean's (2007b) conversational maxim of quantity.

For being able to take an insider perspective on the time interval in the *while*-clause, the properties of this temporal clause are crucial. The *while*-clause contained a homogeneous predicate: *the music was playing*. Because this predicate is homogeneous, any subinterval of 'music playing' also qualifies as 'music playing'. It is the homogeneous nature of the temporal clause that is crucial for the possibility of taking an inside perspective on the event in a situation. Therefore, we predict that when the properties of the *while* clause change, the possibilities of the IPF to take an inside perspective will also change for adults. In fact, our intuition is that sentences such as the ones in (13) in which the verb in the while clause is PF, are not compatible with situations in which the *while*-clause includes the failure point even though the verb in the main clause is marked with IPF.

- (13) a. Mientras estuvo sonando música, el payaso hacía el puzle  
*While bePF sounding the music, the clown makeIPF the puzzle*  
 'While the music had been playing, the clown was making the puzzle'
- b. Hasta que la música paró, el payaso hacía el puzle  
*Until that the music stopPF, the clown makeIPF the puzzle*  
 'Until the music stopped, the clown was making the puzzle'

The influence of the properties of the RefT in the interpretation of the IPF has to be tested to see whether there are differences across languages or across age-groups in the acceptance of IPF for incomplete situations. Additionally, we predict that providing an explicit RefT in the ASPECT CURTAINS EXPERIMENT will improve children's performance and that children will be sensitive to the properties of such RefT. Preliminary data on children's comprehension of IPF with a modified version of the ASPECT CURTAINS EXPERIMENT (García del Real, in prep.) seem to confirm this prediction. In this modified version, the story in the narratives and the pictures (the introductory picture, the picture of the curtains and the two final pictures) were maintained, but two different explicit temporal clauses were added to the test sentence: a durative RefT ('mientras las cortinas estaban cerradas' *while the curtains were closed*) and a punctual RefT ('cuando miré detrás de las cortinas' *when I looked behind the curtains*). Preliminary results show that, as predicted, children's performance with IPF improves when an explicit durative temporal clause is included in the test sentence.

To sum up, results on the ASPECT CURTAINS EXPERIMENT and the ASPECT MOVIES EXPERIMENT enable us to conclude that there is no evidence that children have difficulties with the IPF at the semantic level (i.e. at applying aspectual coercion) at the age of 5 (contra: 2007, van Hout, 2008) but, instead, their non-adult-like interpretation of IPF is generated at the discourse level: children are sensitive to the properties of the context in the task –the presence or absence of a narrative– and they have difficulties at identifying the proper antecedent time (RefT) for the IPF (in line with 2007, van Hout, 2007b, van Hout, 2008). When an explicit antecedent RefT is provided via temporal modification –through a *while*-clause– children's comprehension of IPF is adult-like (in line with Kazanina and Philips, 2007). Finally, children are sensitive to the properties of the explicit temporal modification, and

they can take an inside perspective on the *while*-clause when it contains a homogeneous predicate (contra Olsen, 1997); this inside-perspective can lead them to assume a different RefT than adults for production, not making an assertion about the maximal interval that the *while*-clause denotes and producing IPF forms instead of PF forms for the complete situation.

These conclusions have one main implication for future acquisition: the difference in children's understanding of IPF as depending on the experimental situation and the presence and nature of an explicit temporal clause to delimit the RefT suggests that the nature of the temporal referent in the discourse for determining the anaphoricity of IPF is a methodological factor to consider when testing the comprehension of grammatical aspect.

#### PREDICTION 6: the kind of task

One of the main contributions of this dissertation is that it tests children's knowledge of grammatical aspect with three different kinds of tasks: a picture-selection task, a truth-value-judgment task and an elicited-production task. These tasks are very different in the kind of reasoning they impose. On the one hand, in a truth-value-judgment task, forms are evaluated individually as to whether they can be used to describe complete and incomplete situations. Thus, the participant is asked whether a certain form is accepted or not for all possible interpretations. In contrast, in a picture-selection task, the participant is exposed to a series of pictures that show different interpretations (a complete event, an incomplete event or an ongoing event, in the case of the ASPECT CURTAINS EXPERIMENT) and the participant chooses which interpretation is preferred for a given form. Similarly, in an elicited-production task, participants choose which form best describes a situation; the different forms available to describe a certain situation are subconsciously compared to determine which is the most appropriate to describe the situation.

Adults' responses to the three different tasks reflect the different kinds of demands that these tasks impose. As Table 8.3 shows, adults tended to relate IPF to a complete and incomplete situation, whereas in the picture-selection task and the

elicited-production task, adults tended to relate the IPF only to an incomplete situation.

	PF	IPF
Truth-value judgment task	Accepted for COMPLETE	Accepted for COMPLETE and INCOMPLETE
Picture-selection task	Linked to COMPLETE	Linked to ONGOING <sup>67</sup>
Elicited production task	Used for COMPLETE	Used for INCOMPLETE

Table 8.3: Adult responses in the different tasks

IPF can in principle refer to complete and incomplete events, as in truth-value-judgment tasks. However, when PF and IPF are contrasted, IPF is related only to incomplete events by pragmatic enrichment: PF and IPF form an informative scale in which PF is more informative than IPF, because PF entails completion while IPF does not. Thus, IPF can give rise to a scalar implicature according to which IPF is used instead of PF because the speaker does not know if completion took place : ‘the clown was making a bridge’ enriched to mean ‘the clown was making a bridge and did not finish it’ (Noveck, 2004, Smith, 1980). This is the kind of response adults provide in the picture-selection task and the elicited production task. Therefore, we argue that the different tasks involve different kinds of reasoning: the truth-value-judgment task involves semantic reasoning while the picture-selection task<sup>68</sup> and the elicited-production task induce pragmatic reasoning.

In other domains of language, such as quantifiers, numerals, definite and indefinite articles, aspectual verbs, etc., late acquisition of scalar implicatures is reported

<sup>67</sup>There is a difference in the materials used and the kind of situations that are contrasted. In the picture-selection task, where pictures were used, ongoing, complete and incomplete versions of the events were contrasted; in the truth-value-judgment task and the elicited-production task we used video-clips, and complete and incomplete versions of the events were contrasted. IPF refers to an ongoing event in the past, and thus, both the ongoing picture and the ongoing situation that resulted in a complete or an incomplete event represented in the videos are potential referents for the IPF.

<sup>68</sup>The idea that picture-selection tasks involve pragmatic reasoning was pursued by Fiorin (2010). In this study a picture-selection task was used to test typically developing children and dyslexic children in their comprehension of Italian PF and IPF grammatical aspect.

(Kazanina and Philips, 2003, Papafragou and Musolino, 2003, Pouscoulous et al., 2007, van Hout et al., 2010b). Children, even at the age of five, are claimed to have difficulties in raising scalar implicatures, even though at this age they have already acquired the meaning of the forms. Therefore, assuming that children do not always compute scalar implicatures, we expected adult-like responses by 5 year-old children in the truth-value-judgment task but not in the elicited-production and the picture-selection tasks.

The results across our tasks confirmed this prediction. In the truth-value-judgment task children's performance was adult-like: both children and adults accepted PF for complete events and IPF for both complete and incomplete events. Thus, children showed that they have acquired the semantics of grammatical aspect: they know that PF entails completion while IPF does not. Adults' and children's responses were different in the picture-selection task: adults chose only ongoing events for IPF; whereas children chose pictures depicting both ongoing and complete events. Children's responses were also non-adult-like in the elicited production task: children produced IPF forms in the complete situation while adults only used IPF for the incomplete situation and never for the complete situation. Similar overproduction of IPF markers were found in the TENSE MOVIES EXPERIMENT for the past situation: adults tended to produce PF while children produced IPF. Therefore, children do not seem to apply the pragmatic enrichment of the IPF: they do not compute the scalar implicature of the IPF in contrast to adults.

Furthermore, the differences between the truth-value-judgment task on the one hand, and the picture-selection task and the production task on the other, connect to methodological issues regarding the previous literature on the acquisition of grammatical aspect. As shown in Table 8.4, experiments testing grammatical aspect used truth-value-judgment tasks, forced one-to-one sentence-to-scene matching tasks, sentence-to-scene matching tasks, picture selection tasks and elicited production tasks. Adults and children's responses were different for each of these tasks in the sense that children show wider optionality in the use of the IPF form:

TASK	TARGET / ADULTS' RESPONSE	CHILDREN'S RESPONSE	REFERENCES
Truth-value judgment	Complete & incomplete	Complete & incomplete	Kazanina & Phillips (2007, 2001)
			ASPECT MOVIES EXPERIMENT (Chapter 5)
Forced sentence-to-scene matching tasks	Ongoing	Ongoing	Vinnitskaya & Wexler (1991) Weist et al. (2003, 1984)
	Incomplete (one-sentence)	Complete & incomplete	Wagner (1998, 2002)
	Complete & incomplete (two sentences)	Complete & incomplete	Wagner (1998, 2002)
Sentence-to-scene matching tasks	Complete & incomplete	Complete <sup>69</sup>	Kazanina & Phillips (2007)
Picture-selection	Ongoing	Complete & ongoing	Hollebrandse et al. (2005), van Hout (2005, 2007, 2008)
			ASPECT CURTAINS EXPERIMENT (Chapter 4)
Elicited production	Incomplete	Complete & incomplete	Hodgson (2003), Vinnitskaya & Wexler, (2001)
			ASPECT MOVIES EXPERIMENT (Chapter 6) TENSE MOVIES EXPERIMENT (Chapter 3)

Table 8.4: Tasks and participant's responses for IPF across studies

The data presented in this section suggest that there are certain tasks in which adults interpret IPF semantically while in some other tasks IPF is interpreted pragmatically. Scalar implicatures with IPF in adult speech are not generated as often as they are generated with numerals, quantifiers and definite/indefinite articles. IPF is often used in contexts where the SI is not drawn. IPF is not enriched to imply lack of completion, for example when it is used to convey background information (14) or when completion is shared information by the speaker and the hearer and therefore is not relevant to the conversation.

<sup>69</sup>Half of the children selected only complete, and the other half of the children selected complete and incomplete, providing an adult-like response.



- (14) María se estaba comiendo/ comía la sopa cuando llegué  
 María SE beIPF eating/eat.IPF the soup when I arrived  
 'María was eating the soup when I arrived'

Therefore, in order to draw more firm conclusions about the pragmatics of grammatical aspect and its acquisition, further research needs to be done in order to study what the conditions for the generation of the implicatures for the IPF in adult language from a theoretical and an empirical point of view are.

To sum up, the study carried out in this dissertation has enabled us to draw the following conclusions:

1. 5 year-olds have already acquired the main distinctions within the level of TENSE: they can distinguish past, present and future markers and they can use them properly.
2. Spanish children at the age of 5 have acquired the meaning of GRAMMATICAL ASPECT markers but:
  - a. they have not yet acquired the pragmatic uses of the IPF.
  - b. they have difficulties at identifying the proper anaphoric Reference Time for IPF.
3. At the level of PREDICATIONAL ASPECT, children at the age of 5 still have problems at identifying incremental-theme predicates as telic.
4. Although the morphological complexity and the degree of polysemy of the different forms does not affect 5 year-old's comprehension of tense and aspect, they have a preference for periphrastic forms in production.

Many questions have been left unanswered in this dissertation. First, since children at the age of 5 have already acquired the semantics of tense and aspect, it is important to study what happens at younger ages to determine when, how and what factors influence the acquisition of the semantics of aspect and, more specifically, to test if the morphological complexity and degree of polysemy of the forms affect tense and aspect acquisition at earlier ages. Additionally, it would be interesting to study what properties of the explicit RefT affect adult's and children's

comprehension of IPF and how they do so. Furthermore, from the point of view of the theory and of tense and aspect in adult language, we have pointed out that more study needs to be done to determine under which conditions IPF is enriched to imply lack of completion. Finally, more empirical research has to be done on adults' and children's comprehension of telicity on incremental-theme predicates with and without measure phrases and on change-of-state predicates with events that involve a process.

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