

1 Additive particles

1.1 Initial observations

- The adverb *too* is obligatory in sentential conjunctions when there is exactly one meaning difference (Green, 1968).

- (1) a. Jo had fish and Mo did too.
 b. *Jo had fish and Mo did.

- (2) a. *Jo had fish and Mo had soup too.
 b. Jo had fish and Mo had soup. (Kaplan, 1984)

- *Too* is a stripping adverb:

- (3) a. *Abby* speaks passable Dutch, and *Ben*, too.
 b. *Abby* speaks passable Dutch, AND *Ben*.
 c. *Abby* speaks passable Dutch, (but) not *Ben*.
 d. *Abby* speaks Dutch, but *Ben*? No way.
 e. %John didn't drink coffee, but tea.
 f. %John drank not coffee but tea. (Merchant, 2003)

- (4) a. Jo likes syntax and Mo likes syntax too.
 b. ? Jo likes syntax and Mo likes syntax.

- (5) a. Jo had fish and Mo had soup also.
 b. *Jo had fish and Mo had soup too. (Kaplan, 1984)

- In some cases the absence of *too* gives rise to inferences:

- (6) a. #Barb is seventeen, and WENDY is old enough to have a driver's license
 b. Barb is seventeen, and WENDY is old enough to have a driver's license, too (Green, 1968)

- (7) [The 5000 m race was won by Gianni Romme.]
 a. The 1500 m race was won by a Dutch skater.
 ∴ G. Romme is **not** Dutch.
 b. The 1500 m race was won by a Dutch skater too.
 ∴ G. Romme is Dutch. (Sæbø, 2004)

1.2 Variability of obligatoriness

- (8) Jo_{tc} sent Helen a note and Mo_{tc} sent Helen a note

- – Two coordinated sentences ;
 – Connective: *and*, or *but*
 – Two arguments that differ : contrastive topics_{tc} CTs
 – One repeated predicate : *comment*

1.2.1 Reduction of the comment

- Gradation of the “reduction” of the comment:

- (9) a. sent Helen a note
b. sent her a note
c. sent her one
d. did so / it
e. did
- (10) a. Jo sent Helen a note and Mo sent Helen a note too.
b. ? Jo sent Helen a note and Mo sent Helen a note.
- (11) a. Jo sent Helen a note and Mo sent Helen one (too / * \emptyset).
b. Jo sent Helen a note and Mo did (so/it/ \emptyset) (too / * \emptyset).

⇒ The more the comment is reduced, the more *too* is obligatory

Experimental verification preliminary data

- French doesn't allow pure repetition of identical comments:

- (12) a. *Max a offert des cadeaux à Léa et Luc a offert des cadeaux à Léa.
Max gave gifts to Léa and Luc gave gifts to Léa
b. *Max a offert des cadeaux à Léa et Luc a offert des cadeaux à Léa aussi.
Max gave gifts to Léa and Luc gave gifts to Léa too
- (13) a. (Luc) a offert des cadeaux à Léa
b. (Luc) en a offert à Léa
c. (Luc) lui a offert des cadeaux
d. (Luc) lui en a offert
e. (Luc) l'a fait
f. (Luc) \emptyset

- Design

- Questionnaire experiment, on Internet. 80 subjects.
- Mixed with other experiments, so that our sentences serve as fillers for the others.
- Acceptability judgements, on a 10-point scale.
- 24 examples \times 10 conditions

- (14) Un étudiant a démontré ce théorème à Stéphane, et son collègue...
A student has proved this theorem to Stéphane, and his colleague...

... a démontré ce théorème à Stéphane	aussi	ful+	-obl
... a démontré ce théorème à Stéphane		ful-	
... l'a démontré à Stéphane	aussi	cpt+	
... l'a démontré à Stéphane		cpt-	
... lui a démontré ce théorème	aussi	obl+	
... lui a démontré ce théorème		obl-	
... le lui a démontré	aussi	pro+	
... le lui a démontré		pro-	
... l'a fait	aussi	vpe+	
... l'a fait		vpe-	
...	aussi	vid+	
...		vid-	+obl

- Expected results

ful+	<i>not so good, because of repetition</i>
ful-	<i>idem</i>
cpt+	} <i>bigger and bigger contrast between + and -</i>
cpt-	
vpe+	
vpe-	
vid+	<i>highest acceptability</i>
vid-	<i>lowest acceptability</i>

- Results

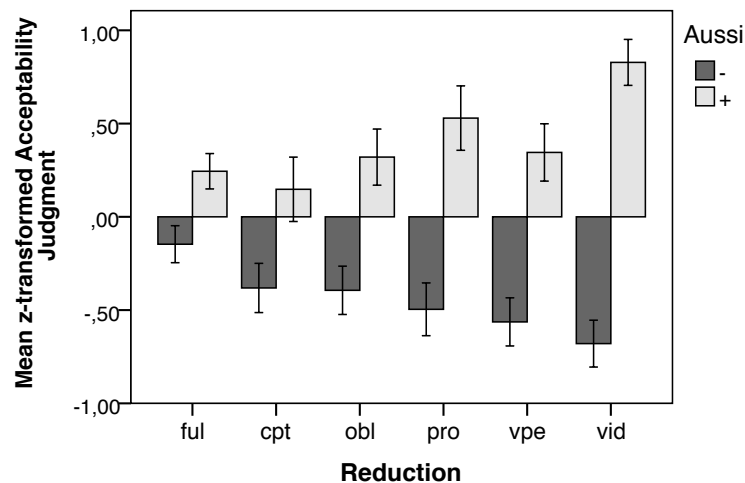


Figure 1: Mean Judgments of Acceptability normalized by participant: 0 denotes average answer, positive values indicate higher acceptability with 1 being one standard deviation better than the average sentence.

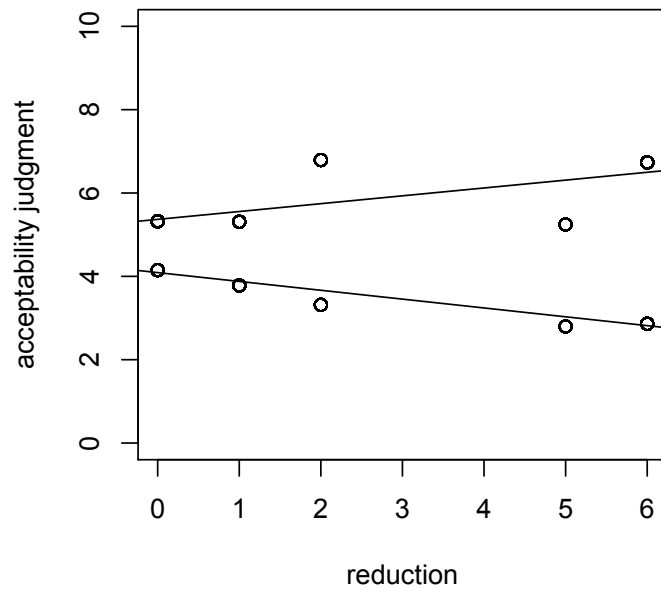


Figure 2: Interaction degree of reduction/presence of *aussi*. Reduction is the numeric equivalent to the conditions above: we score 1 point of reduction for each pronominalisation and two points for a complete drop. The two conditions *obl* and *cpt* are both scored 1. The plot includes dots that indicate the mean answer (absolute) for this degree of reduction with *aussi* (top) and without *aussi* (bottom) in addition to the regression lines for the two groups.

- English replication: 40 subjects, collected through Amazon’s Mechanical Turc, with the help of Ted Gibson (MIT)

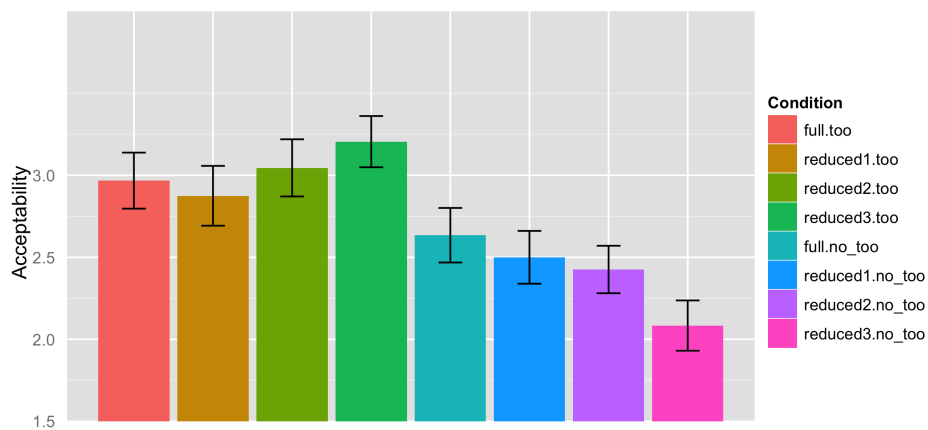


Figure 3: Normalized acceptability for the English version of the experiment

- Conclusions
 - relatively bad acceptability of full repetition confirmed
 - Kaplan’s intuition confirmed (for French): there is a gradation of acceptability

1.2.2 Function of the CTs

- (15) a. Jo showed the book to Fred_{tc} and she showed it to Bill_{tc} (too / * ∅)
 b. Jo caught_{tc} the fish and she cleaned_{tc} the fish (too / ? ∅)
- (16) a. Jo has lived in Philadelphia, and she has lived in San Diego (too / ∅)
 b. Jo sneezes because she has fever and because she’s nervous (too / ∅)

- Kaplan: the more central the syntactic function of the CT, the more *too* is obligatory.
- Subject > Direct Object > ... > locative cpt > causal subordinate clause

- (17) a. *Max_{tc} was there yesterday, and Paul_{tc} was there yesterday.
 b. Max was there yesterday_{tc}, and he was there this morning_{tc}

1.2.3 Identity of senses *vs.* identity of references

Sloppy *vs.* strict reading in ellipsis

(18) Paul loves his wife, and so does Max.
 a. Sloppy: *Max loves his own wife*
 b. Strict: *Max loves Paul’s wife*

- *too* is (a lot more) obligatory when the identity of references is forced:

- (19) [Jo wrote an article to debunk Chomsky’s claim,]
- a. ... and she wrote $\left\{ \begin{array}{l} \text{one} \\ \text{an article} \end{array} \right.$ to improve her tenure file (too / ∅).
- b. ... and she wrote $\left\{ \begin{array}{l} \text{it} \\ \text{the article} \end{array} \right.$ to improve her tenure file (too / *∅).

- When *too* is optional, there is a reading difference:

- (20) I bought a car so that I could stay out late, and I bought one so (that) I could get to school (too / ∅) (Kaplan, 1984, ex(10))

- More on identity of the comment

- (21) a. Paul est allé au MacDonald's, et Léa a sifflé.
 b. #Paul est allé au MacDonald's, et Léa a sifflé aussi.
Paul went to McDonald's, and Léa whistled (too)
- (22) a. Paul est allé au MacDonald's, et Léa a fait un mauvais repas.
 b. Paul est allé au MacDonald's, et Léa a fait un mauvais repas aussi.
Paul went to McDonald's, and Léa had a bad meal (too)
 (Pulman, 1997; Winterstein, 2010)
- (23) a. Paul aime sa femme et Max est amoureux.
 b. Paul aime sa femme et Max aussi est amoureux.
Paul loves his wife and Max (too) is in love
- (24) a. Paul est sorti pour voir et Max est sorti.
 b. Paul est sorti pour voir et Max est sorti aussi.
Paul is gone out to watch, and Max is gone out (too)

1.2.4 Role of the conjunction

- Kaplan: *too* is more obligatory when sentences are conjoined with *but* than when they are conjoined with *and*.

- (25) a. Jo hit a homer and Mo did too.
 b. Jo hit a homer $\widehat{\text{AND}}$ MÓ did \emptyset
 c. Jo hit a homer but Mo did too.
 d. *Jo hit a homer $\widehat{\text{BUT}}$ MÓ did \emptyset
- (26) a. *Jean a mangé de la soupe mais il a mangé du dessert.
Jean ate soup but he ate dessert
 b. *Jean a mangé de la soupe mais Max en a mangé.
Jean ate soup but Max ate some
 c. Jean a mangé de la soupe mais Léa a mangé du dessert.
Jean ate soup but Léa ate dessert
- (27) *Jo hit a homer but Mo did.
- (28) Jo hit a homer but Mo did too.
- (29) a. The administration wants to eliminate 50 faculty positions, but the faculty does too!
 b. #The administration wants to eliminate 50 faculty positions, but the state legislature does too!

- Further investigation needed

1.2.5 Taking stock

- Specific paradigm
- Obligatoriness \Leftrightarrow Resemblance
- Role of discourse structure

1.3 Corpus studies

1.3.1 When there is no contrastive topic

- “That is, *too* is obligatory when we need to emphasize what is important about the content of a two-clause text, when what is important is that the same thing is predicated about two contrasting items.” (Kaplan, 1984)
- (30) a. What did Mo and Jo have ?
 b. Mo had fish.
 c. Mo and Jo had fish.
 d. Mo had fish, and Jo had fish, too.
- (31) — I want to see Son-of-Thunder. Fetch him. So Good Care rose, fetched the newborn boy and held him out before his dying father. Swift Deer opened his eyes for the very last time, and Son-of-Thunder had his eyes open *#(too)*. (Sæbø, 2004, ex(7b))
- (32) Swift Deer could see pine-clad mountains on the other side of the Rain Valley. Far away to the east and west the dry prairies stretched out as far as the eye could see. (i) To the north lay the yellow-brown desert, a low belt of green cactus-covered ridges and distant blue mountain ranges with sharp peaks. (ii) To the south (*#* \emptyset / too) he could see mountains.
- (33) When the gods arrive at Jotunheim, the giants prepare the wedding feast. But during the feast, the bride—Thor, that is—devours an entire ox and eight salmon. He also drinks three barrels of beer. This astonishes Thrym. But Loki averts the danger by explaining that Freyja has been looking forward to coming to Jotunheim so much that she has not eaten for a week. When Thrym lifts the bridal veil to kiss the bride, he is startled to find himself looking into Thor’s burning eyes. This time, too, Loki saves the situation, explaining that the bride has not slept for a week for longing for Jotunheim. (Sæbø, 2004, ex(9))

1.3.2 Is *too* removable?

A couple of examples from Zeevat

- A corpus study only alluded to in (Winterstein & Zeevat, 2012):

Method Collect literary samples with additive particles, remove the additive ;

Corpus Oslo Parallel Corpus (English-Norwegian section)

Results “Half obligatory, half optional”

- “The obligation to put in *too* in the positions where one finds it in a corpus of utterances can be tested by trying to leave it out. A small probe of this kind by one of the authors on the English utterances of the Oslo Parallel Corpus gives obligatory cases and optional cases in roughly the same frequencies. The texts are literary in this corpus and only short pre-contexts were considered, though this never meant that an antecedent could not be identified. The optional cases all can be described as cases where it is optional to see the host as dealing with a question that was already addressed before.” (Winterstein & Zeevat, 2012)

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- (34) a. Hartmann’s joy was apparent in his beautifully cut hair, his expensive suit, his manicured hands, the faint aura of cologne that heralded his approach; in his mild and habitually smiling face, *too*, his expressive walk, in which the body, leaning slightly forward, seemed to indicate amiability.
- b. To Yvette the story had no resonance except as a novelette, the kind of which she believed implicitly, despite her relative sophistication, and this *too* was a common position among women in the days that preceded enlightenment.

- Optional: cases where it is not obvious that there is a link between the host and the antecedent
- Salience plays a role

Unpublished study (Amsili, 2012)

Method

- collect all occurrences of additives ;
- remove the additive ;
- decide whether
 - there is no difference
 - it becomes agrammatical
 - it gives to new inferences

Corpus Novel from the French writer Jules Verne, *Cinq semaines en ballon*, published in 1863 (J. Hetzel et Compagnie), (259 p.). About 82 000 words.

Results Roughly, 2/3 obligatory, 1/3 optional

- Total number of occurrences of (some) additive particles:

<i>aussi</i> (10), <i>non plus</i> (1)	11
<i>également</i>	7
<i>de nouveau</i>	9
<i>ainsi que</i>	4
<i>de plus</i>	3
	34

- Classification of the 27 occurrences studied:

Optional		9	33 %
Obligatory	ill-formed	11	} 66 %
	unwanted inference	7	

Optional

- (35) d’une année à l’autre, ces marais, couverts de roseaux et de papyrus de quinze pieds, deviennent le lac lui-même ; souvent aussi, les villes étalées sur ses bords sont à demi submergées, (...)
- (36) Il se munit de trois ancres en fer bien éprouvées, ainsi que d’une échelle de soie légère et résistante, longue d’une cinquantaine de pieds. Il calcula également le poids exact de ses vivres;

- distance between host and antecedent
- sloppy identity between host and antecedent
- discourse necessity: in (36), a discourse topic becomes salient “the preparation of the journey”

Obligatory

- Real feeling of ill-formedness
- (37) — Espérons que rien de semblable ne nous arrivera, dit le chasseur; jusqu’ici notre traversée ne me paraît pas dangereuse, et je ne vois pas de raison qui nous empêche d’arriver à notre but.
— Je n’en vois pas non plus, mon cher Dick;
- (38) — Si nous étions à bonne portée, dit le chasseur, je m’amuserais à les démonter les uns après les autres.
— Oui-da ! répondit Fergusson; mais ils seraient à bonne portée aussi, et notre Victoria offrirait un but trop facile aux balles de leurs longs mousquets ;
- identity of the forms (same words)
 - Short distance
 - Dialogic/contrastive effects

Unwanted inferences

- (39) Le gouvernement anglais a mis un transport à ma disposition; il a été convenu également que trois ou quatre navires iraient croiser sur la côte occidentale vers l’époque présumée de mon arrivée.
- (40) Et il plongea rapidement, mais pas assez pour éviter le contact d’un corps énorme dont l’épiderme écaillé l’écorcha au passage; il se crut perdu, et se mit à nager avec une vitesse désespérée ; il revint à la surface de l’eau, respira et disparut de nouveau.
- (41) — (...) ces peuplades sont considérées comme anthropophages.
— Cela est-il certain ?
— Très certain; on avait aussi prétendu que ces indigènes étaient pourvus d’une queue comme de simples quadrupèdes; mais on a bientôt reconnu que cet appendice appartenait aux peaux de bête dont ils sont revêtus.

Annotation study 1

- 10 raters, 17 samples, 3 classes
- confidence score added
- poor inter-annotator agreement $\kappa = 0.22$
 - Since the overall agreement is so low, we don’t get reliable figures for the distribution of the 17 samples into our 3 classes;

- however, there are cases where the inter-annotator agreement is reasonably high: it concerns about half of the items, and 6 of them are labelled **optional**, while 3 are labelled **obligatory**.
- Our category **inferential** is clearly the most problematic one, and this is confirmed by the confidence scores: there is a significant difference between the means for this category and the means for the other two, strongly suggesting that the annotators were not at ease with this category.

Annotation study 2

- 15 raters (undergrad students), 47 samples extracted from 3 novels.
- Two categories (optional/obligatory).
- Very poor inter-annotator agreement ($\kappa = 0.24$). the inferential case may not have been the issue.
- Three cases of complete agreement, all of them obligatory.

⇒ Main conclusions

- Too is not always perceived as being obligatory, a significant number of its uses appear optional to speakers.
- The task appears hard: indirect methods should be favored in this domain.

1.4 Behavioral studies

1.4.1 (Dimroth *et al.* , 2010)

- Experiment of L1/L2 acquisition
 - L1: children aged 4, 7 and 10 (French, German, Polish)
 - L2: adults L1 German/Polish, L2 French
 - Control: native speakers French (adults)
- Many research questions (incl. cross-language comparisons)
- Task: production of a narrative
 - 2 characters (Mr. Blue, Mr. Red)
 - series of 30 images, spontaneous narrative asked
 - at some point, a character performs an action that was performed earlier, by the same character, or by the other one.

Type	Antecedent (1) and subsequent (2) predication	Information configuration of in utterance (2)– comparison to (1)				Example utterances with corresponding information structure marking
		Polarity	Topic situation		Comment	
			Time	Entity		
I	1: Mr. Red going to bed 2: Mr. Blue going to bed	=	Shift	≠	=	1: Mr. Red goes to bed 2: Mr. Blue also goes to bed
II	1: Mr. Green not jumping 2: Mr. Blue jumping	≠	Shift	≠	=	1: Mr. Green doesn't jump 2: Mr. Blue on the other hand does jump
III	1: Mr. Red not jumping 2: Mr. Red jumping	≠	Shift	=	=	1: Mr. Red doesn't jump 2: Mr. Red eventually jumps

(Dimroth *et al.* , 2010)

- Results
 - Additive particules are learned early but what is long to master is their association properties (focus-sensitivity)
 - Frequent discourses produced without additives (where they're expected), but
 - The observation of the productions of the control group (adult native speakers) show remarkable tendencies:
 - * In a situation where a new character performs an action already performed by the other character (15 images earlier), 80% of the subjects use an additive marking.
 - * On the other hand, in a situation where one character leaves, then after one image, the other character leaves, the percentage of subjects marking the additivity is around 20-30% in the 3 languages.
Possible explanation: the sequence is appropriate for another relation, since the two character leave in opposite directions ;
 - * In a situation where the same character is in the same situation (sleeping on a bench) at two stages separated by images showing a change of state, between 90% and 100% of the French or German subjects mark the repetition of the state (with particles, verbal prefixes...), whereas the percentage is lower for Polish speakers.

1.4.2 (Eckard & Fränkel, 2012)

- Experimental verification of (Amsili & Beyssade, 2010)'s claims
- Task : production of a narrative induced by a series of images
 - Four images for each story
 - Two characters (Otto & Fred), easily identifiable
 - The sequences may contain repetitions:
 - * the same character re-does the same action (with a visible interruption
 - * a same action is realized in sequence by the two characters
 - * Three series of 10 : 10 “again (same action, same character), 10 “too” (same action, different character), 10 “filler(s)” .
 - **Two conditions:**
 1. Write a story, like in a children book
 2. Report, like a secret agent, the activity of persons under watch. In this case the form to be filled has lines which start with an hour.
 - Collection (*post hoc*) of a group of target words which have an additive value (*auch, ebenfalls, erneut, nochmals...*).

- Results

- Number of add-words :

Group	N	mean
story	25	10.96
watch	25	1

(Eckard & Fränkel, 2012)

⇒ Productivity of additive words very sensitive to discourse structure

Additive particles

- are obligatory in a well-formed discourse when an element has already been introduced.
- may be repeated

(42) Luc a fait une erreur qu'il ne refera plus.
Luc made a mistake he won't re-do any more

- form classes :
 - new individual too, another NP, also...
 - new event too, again, still
- have a gradient of obligatoriness, depending on distance and formal identity
- may be less necessary in some types of discourse
- induce inferences with regards to identity/difference

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