

How Obligatory is *too* ?

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On sait depuis longtemps que l’adverbe ”aussi” est obligatoire dans nombre de contextes, mais l’existence d’exceptions rend cette généralisation fragile. En reprenant une proposition de Kaplan 80, nous présentons des données expérimentales et une étude sur corpus qui montrent que l’obligation d’utiliser ”aussi” est en fait sensible à divers paramètres (comme le degré de réduction anaphorique). Ces données nouvelles nous permettent d’ébaucher une explication générale pour ce phénomène.

It’s well-known that the adverb ’too’ (or its French correspondent, ’aussi’) is obligatory in a number of contexts, but since there are several exceptions, this generalization remains fragile. Starting with a proposal made by Jeff Kaplan in the 80ies, we present a behavioral study and a corpus study which show that the degree of obligatoriness varies along with several parameters, including the ”degree of anaphoric reduction” of the construction. These new results shed a new light on the general phenomenon of obligatory pre-suppositions.

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- *too* is said to be obligatory
 - What does it mean to be obligatory?
 - Is obligatoriness a boolean property?

1 *Too* is obligatory

- 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. *Reagan frightens Jo but he does Mo.
b. Reagan frightens Jo but he does Mo too. (Kaplan, 1984)
- (3) a. — What did Peter and Pia eat?
b. —*Peter ate pasta, and Pia ate pasta.
c. — Peter ate pasta, and Pia ate pasta, too. (Krifka, 1999)

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

- (4) 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)
- (5) [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)
- (6) 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. To the north lay the yellow-brown desert, a low belt of green cactus-covered ridges and distant blue mountain ranges with sharp peaks. To the south #(too) he could see mountains. (Sæbø, 2004)
- (7) — 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))
- (8) Jean est malade, Marie est malade, Paul est malade, tout le monde est malade alors !
John is sick, Marie is sick, Paul is sick, everybody is sick then!
- (9) Il était là hier, il est là aujourd'hui.
He was there yesterday, he is there today

2 Corpus studies: is *too* removable?

2.1 Zeevat’s “probe”

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

Method Collect literary samples with additive particles, try to leave it out ;

Corpus Oslo Parallel Corpus (English-Norwegian section)

Results obligatory cases and optional cases in “roughly the same frequencies”

2.2 Amsili’s unpublished study

Method

- collect all occurrences of additives ;
- remove the additive ;
- decide whether
 - there is no difference (**optional** cases)
 - it becomes agrammatical (**obligatory** cases)
 - it gives rise to new inferences (**inferential** cases)

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:
- Results:

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

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

Optional

- distance between host and antecedent
- sloppy identity between host and antecedent
- discourse necessity: in (10), a discourse topic becomes salient “the preparation of the journey”

(10) 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;

(11) — (...) il faudra d’ailleurs ménager nos vivres, et, chemin faisant, mon brave Dick, tu nous approvisionneras de viande fraîche.
— Dès que tu le voudras, ami Samuel.
— Nous aurons aussi à renouveler notre réserve d’eau.

Obligatory

- Real feeling of ill-formedness
 - identity of the forms (same words)
 - Short distance
- (12) — 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 ;
- (13) — 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;

(Unwanted) inferences

- (14) — (...) 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.
- (15) 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.

2.3 Pilot annotation study

- 17 items from the same corpus, 3 categories, 10 raters
- judgements accompanied with confidence rates (10 point scale)
- Poor inter-annotator agreement: $\kappa = 0.22$
- 3 items with a good agreement: 2 OPT, 1 OBL
- 6 more items with a fair agreement: 4 OPT, 2 OBL
- significant difference in confidence rates between INF and the two other categories
- between 50 and 66% OPT

⇒ Many optional cases. Intuition : « *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)

⇒ Inferential category not well-defined

3 Variability of obligatoriness

- Parameters of *too*'s obligatoriness:
 - Anaphoric/elliptic reduction of the comment
 - Grammatical function of *too*'s associate
 - Identity of senses *vs.* identity of references
 - *but vs. and*

(Kaplan, 1984)

(16) 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*

3.1 Reduction of the comment

- Gradation of the “reduction” of the comment:

(17) a. sent Helen a note
 b. sent her a note
 c. sent her one
 d. did so / it
 e. did

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

(18) 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.

(19) a. Jo sent Helen a note and Mo sent Helen one (too / *∅).
 b. Jo sent Helen a note and Mo did (so/it/∅) (too / *∅).

Experimental verification in French

- Do we get a really gradable effect ?
- What's the influence of repetition?
- Design
 - Questionnaire experiment, on Internet. 80 subjects.
 - Mixed with other experiments to have fillers.
 - Acceptability judgements, on an 10-point scale.
 - 24 examples × 12 conditions¹

¹To reduce the number of sentences, we made 2 lists with 8 conditions, with some overlapping:

ful	cpt	vpe	vid
ful	obl	pro	vid
80	40	80	

- (20) 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+ |
| ... 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- |

- 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-	
pro+	
pro-	
vpe+	
vpe-	
vid+	<i>highest acceptability</i>
vid-	<i>lowest acceptability</i>

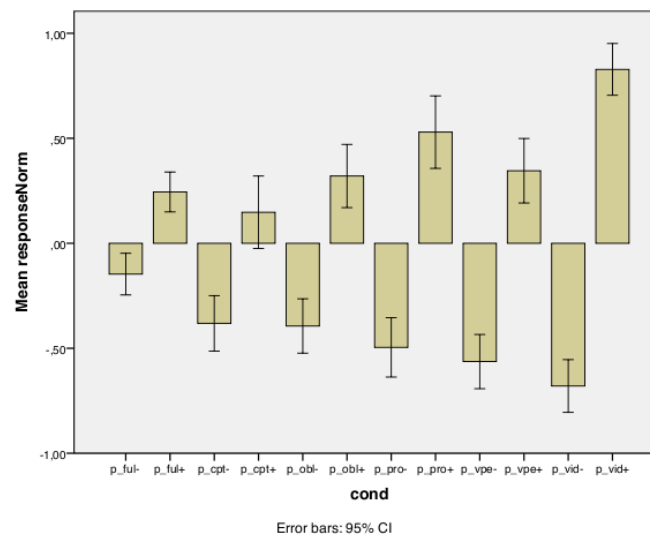


Figure 1: Mean answers normalized by participant: 0 denotes average answer, positive values indicate higher acceptability with 1 being one standard deviation better than the average sentence.

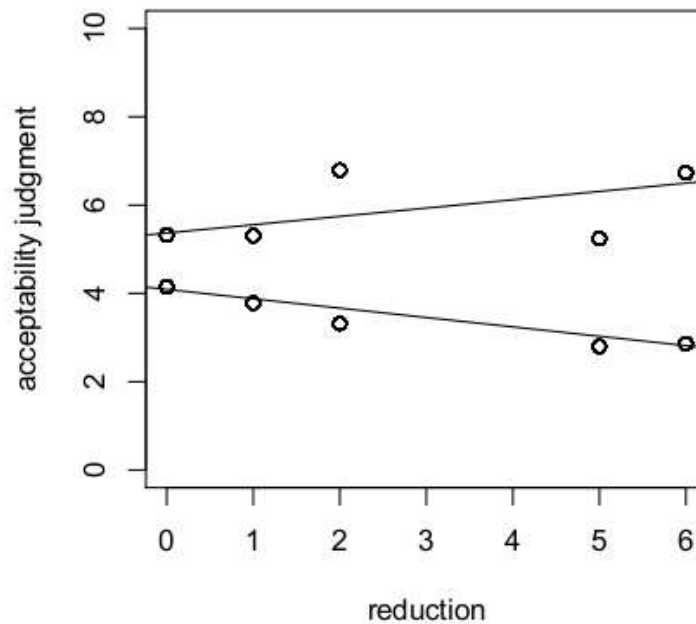


Figure 2: Interaction degree of reduction/presence of *aussi*. Reduction is the numeric equivalent to the conditions above: we score 1 point of reduction for each pronominalisation and two points for a complete drop. The two conditions obl and cpt are both scored 1. The plot includes dots that indicate 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.

- In the linear mixed effects model, the response was modeled with regard to the degree of reduction (0-6) and the presence or absence of *aussi*, including random effects for both, item and participant. While *aussi* had a highly significant positive effect on ratings ($\chi(1)=415.08$, $p < .001$), "degree of reduction" showed no main effect ($\chi(1) < 1$) Crucially, the two factors interacted significantly ($\chi(1)=74.31$, $p < .001$): While with *aussi*, the acceptability increased with reduction, without *aussi* it decreased.

3.2 Function of the CTs

- Kaplan: the more central the syntactic function of the CT, the more *too* is obligatory.

- (21) a. Jo showed the book to Fred_{tc} and she showed it to Bill_c (too / * \emptyset)
 b. Jo caught_{tc} the fish and she cleaned_{tc} the fish (too / ? \emptyset)
- (22) a. Jo has lived in Philadelphia, and she has lived in San Diego (too / \emptyset)
 b. Jo sneezes because she has fever and because she's nervous (too / \emptyset)

- ? Subject > Direct Object > ... > locative cpt > causal subordinate clause

- (23) 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}

3.3 Identity of senses *vs.* identity of references

- Sloppy *vs.* strict reading in ellipsis

- (24) 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:

- (25) [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* / \emptyset).
 b. ... and she wrote $\left\{ \begin{array}{l} \text{it} \\ \text{the article} \end{array} \right.$ to improve her tenure file (*too* / * \emptyset).

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

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

4 Behavioral studies

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 particles 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.

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...*).
- 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

Provisional conclusion

- *too* is obligatory when its conditions of use are met,
- the degree of obligatoriness depends on how identical the comments are perceived,
- and it is sensitive to the discourse structure

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When there is no contrastive topic

- “(...) *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)

- (27)
- What did Mo and Jo have ?
 - Mo had fish.
 - Mo and Jo had fish.
 - Mo had fish, and Jo had fish, too.

- Krifka’s hypothesis:
 - When there are 2 contrastive topics in the context,
 - asserting a predicate *P* of only one of them
 - triggers a distinctiveness implicature:
 - *P* is not true of the second contrastive topic...
 - so that asserting *P* of the second topic gives rise to a contradiction,
 - unless the additive *too* (with stress) is added to the discourse.

- Sæbø (2004): in corpora:
 - not always a distinctiveness implicature (28)
 - not always contrastive topics (29)

- (28) 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. To the north lay the yellow-brown desert, a low belt of green cactus-covered ridges and distant blue mountain ranges with sharp peaks. To the south #(too) he could see mountains. (Sæbø, 2004)

- (Putative) distinctiveness implicature:
the speaker is not willing to assert that *to the south lay the yellow-brown desert, a low belt of green cactus-covered ridges and distant blue mountain ranges with sharp peaks*

- Not in contradiction with:
To the south he could see mountains

- (29) — 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))

- No reason to consider that *Son-of-Thunder* and *Swift Deer* form a contrastive pair.
-

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)

- (30) 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

More on identity of the comment

- (31) 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)
- (32) 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)
- (33) 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
- (34) 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)