

towards a lexicon of event-selecting predicates for a french factbank

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motivation

Long-term goal

- ▶ Factuality assessment of events in French newspaper texts
- ▶ as in [Saurí and Pustejovsky, 2012] for English

Factuality of events is evaluated w.r.t.

a **polarity**: positive (+), negative (−)

a **modality**: certain (CT), probable (PR), possible (PS),
unspecified/uncommitted (U)

factuality of events

Factuality of events is expressed through:

polarity particles: *not, never*

modality particles: *maybe, possibly*

event selecting predicates (ESPs): predicates selecting an event as argument

Effect of **ESPs** on embedded event predicate **leave_e**:

- ▶ Freidin has **failed** to **leave_e** the country.

CT—

Need:

a lexical resource capturing the effect of **ESPs** on the **embedded event**

Our short-term goal:

(semi-)automatical lexicon of ESPs for French.

Motivation

Related work

Our data and annotations

Results on our data

Future Work

References

related work

FactBank [Saurí and Pustejovsky, 2009,
Saurí and Pustejovsky, 2012]

Factive and implicative verbs

[Karttunen, 1971, Nairn et al., 2006]

the english factbank

- ▶ corpus annotated with event factuality
- ▶ TimeBank [Pustejovsky et al., 2005] **events** are assigned **factuality profiles**
 - ▶ manually [Saurí and Pustejovsky, 2009]
 - ▶ automatically [Saurí and Pustejovsky, 2012]
- ▶ automatic detection based on lexicon of **event selecting predicates**

	CT		PR		PS	
polarity	+	-	+	-	+	-
fail	CT-	CT+	PR-	PR+	PS-	PS+

- ▶ Freidin has **failed** to **leave**_e the country. CT+ → CT-

factive and implicative verbs

- ▶ lexical resource for English [Nairn et al., 2006]
- ▶ complement-taking verbs (ESP_s, ≈ 250)
- ▶ classified w.r.t. the polarity of complement clauses (EMB) obtained under positive and negative polarity of ESP
- ▶ Freidin has **failed** to **leave**_e the country. ESP+ → EMB−
- ▶ Freidin has **not failed** to **leave**_e the country. ESP− → EMB+

ESP	polarity		signature	semantic class
	+	−		
fail to	−	+	−1 1	2-way implicative

factive and implicative verbs: inferential classification

	Polarity of ESP		Sample predicate	Signature
	+	-		
2-way implicatives	+	-	<i>manage to</i>	1 -1
	-	+	<i>fail to</i>	-1 1
1-way +implicatives	+	n	<i>force to</i>	1 N
	-	n	<i>refuse to</i>	-1 N
1-way -implicatives	n	-	<i>attempt to</i>	N -1
	n	+	<i>hesitate to</i>	N 1
factives counterfactives	+	+	<i>forget that</i>	1 1
	-	-	<i>pretend that</i>	-1 -1
Neutral	n	n	<i>want to</i>	N N

our data and annotations

towards a french ESP lexicon: our experiments

1. build an English ESP lexicon based on Karttunen et al.'s inferential classification
2. instantiate a French ESP lexicon of verb readings
3. assign inferential signatures to each reading with two research questions in mind:
 - ▶ do signatures vary with outer aspect and animacy?
 - ▶ can we characterise inferential signatures by semantic/syntactic properties?

inferential semantic classes → ESP lexicon

ESP	+	-	signature	semantic class
fail to	-	+	-1 1	2-way implicative



			embedded event	
			CT	
			+	-
ESP	fail to	+	CT-	CT+
	fail to	-	CT+	CT-

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french inferential lexicon: verbs

ESPs from French TimeBank FTiB

[Bittar, 2010, Bittar et al., 2011]



manual translations of inferential classification by

[Nairn et al., 2006]

➔ 49 French verbs

extracted readings for these from 2 French valence lexicons

➔ ≈ 930 readings

french inferential lexicon: annotation

- ▶ selected **ESP readings** ≈ 530 readings
- ▶ manually assigned **inferential signatures** to readings

French: inferential profiles vary with

1. **outer aspect** [Hacquard, 2006]
2. **animacy of subject** [Martin and Schäfer, 2012]

Assigned **3** signatures for each reading with

PFV/+ANIM perfective aspect, animate subject

PFV/-ANIM perfective aspect, inanimate subject

IMP imperfective aspect

probabilistic signature *à la* [Karttunen et al., 2016]

- ▶ distinguish **entailments**, weak/**strong**/neutral inferences

french inferential lexicon: example

obliger 02

Pierre/cela a obligé Marie à partir=*obliger* 02

'Peter/this obliges-PFV-3SG Mary to go.'

PFV/+ANIM: 0.9|N \rightsquigarrow

w. polarity +: **strong inference**, high probability
that embedded event is fact

w. polarity -: no inference, neutral

PFV/-ANIM: 1|-0.9 \rightsquigarrow

w. polarity +: **entails** that embedded event is fact

w. polarity -: **strong inference**, high probability
that embedded event is counterfact

IMP: N|N

results on our data

Counts-based evidence for dependency of **inferential profile** on:

1. Aspect

- 1.1 implicatives, but not factives, have an aspect dependent profile
- 1.2 implicativity is weaker with imperfective aspect
- 1.3 implicativity is weaker with an animate subject

2. Syntax: types of embedded clauses

- 2.1 factive and implicative readings of same verb display distinct subcategorisation pattern

1.1: implicatives (but not factives) have an aspect-dependent profile

factives: same entailment under both polarities, signature $1|1$ or $-1|-1$

implicatives: entailment at least under one polarity eg. $1|-1$, $1|N$, $-0.7|-1$

	with IMP signature	IMP sign \neq PFV sign
Factives under PFV	54	2 (4%)
Implic. under PFV	79	47 (60%)

- ▶ Outer aspect has no influence on factivity;
- ▶ Inferential profile of implicative verbs tends to change with aspect

1.2: imperfective aspect weakens implicativity

Observation: the **entailment** triggered by implicative verbs under their **PFV** form is lost with **IMP**, or at least replaced by a **defeasible** inference:

- ▶ A ce moment-là, elle **a réussi** à s'enfuir. #Mais finalement, elle ne s'est pas enfuie.
'At that moment, she managed to escape. But finally, she didn't escape.'
- ▶ A ce moment-là, elle **réussissait** (encore) à s'enfuir. OK
Mais finalement, elle ne s'est pas enfuie.
'At that moment, she 'was still managing' to escape. But finally, she didn't escape.'

1.2: imperfective aspect weakens implicativity

Questions:

- ▶ Does *réussir* instantiate a more general pattern?
- ▶ Inference stronger for implicative readings with **perfective aspect (PFV)** than with **imperfective aspect (IMP)**?

56 implicative readings with perfective aspect:

IMP \rightsquigarrow weaker infer	IMP \rightsquigarrow stronger infer	no change
41.4%	1.7%	57.2%

\rightsquigarrow For almost half of the readings, the implicative inference with PFV is lost or weakened with IMP.

1.3: animacy weakens implicativity

Remember:

- ▶ Pierre/cela a obligé Marie à partir=*obliger* 02
'Peter/this oblige-PFV-3SG Mary to go.'

- ▶ *obliger* 02 PFV/+ANIM: 0.9|N

- ▶ *obliger* 02 PFV/-ANIM: 1|-0.9

obliger instantiates a more general pattern:

- ▶ > 50% verbs trigger stronger inferences with inanimate subject

Counts-based evidence for dependency of **inferential profile** on:

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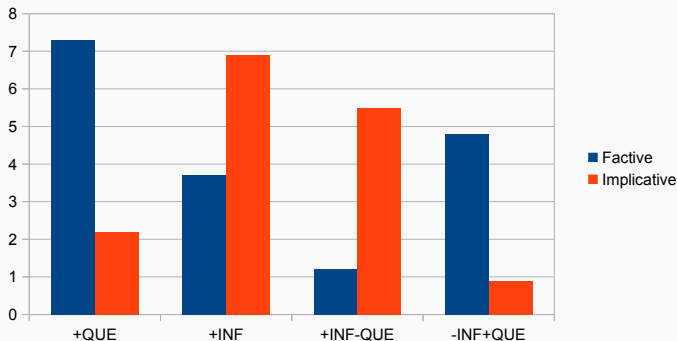
2.1: syntax disambiguates verbs with implicative and factive readings

English (a.o. authors)

- ▶ [White, 2014]: implicative or factive inferential profile
depending on finiteness of the embedded clause
remember that: factive
remember to: implicative
- ▶ [Landau, 2001]: implicatives
 - ▶ do not take finite (*that*)-clauses
 - ▶ take infinitival complement clauses

2.1: syntax disambiguates verbs with implicative and factive readings

French: 20 verbs w. (41) **factive** and (45) **implicative** readings
~> clear differences in the embedded clauses accepted by
implicative vs. **factive** readings:



future work



Use annotated data as seed

- ▶ to identify semantic/syntactic properties characteristic of inferential classes
- ▶ to look for similar candidates

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