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Negation and mood alternation in French **A preliminary experimental investigation of polarity mood**

1. Why study polarity mood in French?

Given the heterogeneity of the contexts where the subjunctive and indicative moods are found in French, it is legitimate to ask whether the mood alternation is semantically motivated, or whether the present picture is the result of historical changes, and the grammaticalization of the mood in certain contexts. In addition, it is well known that there is variation among speakers in the usage of the moods, a variation which has been studied on the basis of corpora for European French (Sand 1983, Vandergheynst 1982) and Canadian French (Auger 1988, Poplack 1992).¹ In fact, the variation leads Poplack to propose a radical view, according to which the moods in French are completely devoid of semantic import, their use being subject to a number of factors, which are not semantic (see also Gross 1978). However, if this were the case, it would be difficult to understand why there is a hard core of verbs which do not allow for the subjunctive in their complement clause, and why this set is stable across Romance Languages (verbs of communication, knowledge and belief) (Farkas 1992). It is true that, according to Poplack's data, and contrary to standard French, there is no corresponding set of verbs, which allow only for the subjunctive in their complement clause (with the exception of *falloir* 'it is necessary'). However, what this means is that the use of the two moods is not on a par, or, more precisely, that there may be some reduction of the subjunctive use, but not that the use of the two moods is (completely) unmotivated. An alternative proposal is to take the heterogeneity view seriously: in a large set of contexts, the moods are motivated, and in another set of contexts, they are or can be grammaticalized. How the two sets are distinguished is where the variation holds. As with other instances of variation, this will include extra-linguistic factors such as register, and speakers' characteristics, so that the notion of standard use can be accommodated in the picture.

In order to gain some insight into this question, we started an investigation of the subjunctive in one specific context. When verbs of the *croire* class (verbs of belief and communication) are the head of an affirmative clause, their clausal complement is in the indicative. When the clause is negative, or interrogative, the complement clause may be in the subjunctive (1). Conversely, when verbs of the *douter* ('doubt') class, which incorporate a lexical negation (negative belief), are in an affirmative clause, the complement clause is preferably, or obligatorily in the subjunctive in standard French. However, when the clause is negative or interrogative, the complement clause may be in the indicative (2). In the following, we concentrate on the effect of negation.²

- (1) a Paul pense que tu es_{IND} / *tu sois_{SUBJ} un très bon candidat.
'Paul thinks that you are an excellent candidate'

¹ As is common practice, regarding this question, we concentrate our attention on the mood in complement clauses (leaving aside other environments in which the subjunctive can appear).

² The studies based on corpora have shown that the effect of négation is stronger than that of interrogation.

- b Paul ne pense pas que tu es _{IND} / tu sois _{SUBJ} un très bon candidat.
‘Paul does not think that you are an excellent candidate’
- (2)
- a Paul doute que nous *pouvons _{IND} / puissions _{SUBJ} réussir cette fois.
‘Paul doubts that we can succeed this time’
 - b Paul ne doute pas que nous pouvons _{IND} / puissions _{SUBJ} réussir cette fois.
‘Paul does not doubt that we can succeed this time’

In the literature, attention has largely been directed towards the first half of the phenomenon (the *croire* context), which is called polarity subjunctive in the Spanish and Catalan tradition, and secondary subjunctive in the French tradition. Given that this has to be completed by the second half of the observations (the *douter* contexts; see Grevisse and Goose 2011, Soutet 2000), we will call it more generally the polarity mood. What is crucial here is that the change in mood possibilities between (1a) and (1b), (2a) and (2b) is a semantic phenomenon.

A word of caution is in order here. We are not claiming that there is a difference in meaning correlated with the choice of mood in (1b) or (2b). It may well be the case that such a difference exists in some environments; for instance, in the complement clause of verbs such as *concevoir* ‘conceive’ or *admettre* ‘admit’ (Nølke 1985, Soutet 2000). Indeed, it is said to be regularly the case in Spanish and Catalan precisely in those polarity environments (a.o. Quer, 2001). But we are dealing here with a different problem. The question we ask is one of motivation: is the occurrence of the subjunctive and/or the indicative semantically (or pragmatically) motivated? Even if the mood is motivated, it does not mean that it occurs in the environment in question, because other factors may be involved.

Accordingly, we want to explore the following hypothesis: the possibility of the subjunctive in (1b) and the indicative in (2b) is due to the occurrence of negation, which creates a different semantic context for the complement clause, which in turn explains the possibility of an alternative mood. It has been observed in spoken corpora that, regarding the occurrence of the subjunctive, the semantic class of the matrix verb is a much more decisive factor than negation of a verb of belief or communication (the subjunctive is found in .09 cases with the negation as contrasted with .77 with volitive verbs, labeled below desiderative and mandative). This makes it the ideal case to investigate whether the linguistic competence of French speakers differentiates between contexts which allow for the subjunctive from those which allow for the indicative. If we find that this competence exists, it follows that not all alternation between indicative and subjunctive is meaningless.

2. The experiment

We chose acceptability judgment questionnaires to investigate whether polarity mood is part of the competence of French speakers: acceptability judgments are appropriate tools for investigating aspects of the competence of speakers. Although they can obviously be influenced by language use as well as by general cognitive factors (such as processing complexity), included in a proper experimental design, controlling for such factors, they allow accessing speakers’ judgments regarding the possibility of an expression as part of their native language. Moreover, they allow a quantitative approach that is all the more required given that the subjunctive has been the topic of numerous speculations on sociolinguistic variation and language decay, often without clear data to support them.

2.1. Description of the questionnaires

We designed two questionnaires. The first one targets the *croire* class, and the second the *douter* class. In both, two negative sentences with identical lexical material, are compared (3), one with an indicative complement, the other with a subjunctive one. Participants were asked to rate their naturalness on a 10 point-scale. The end points of the scale were labeled “pas naturel” (not natural) and “parfaitement naturel” (completely natural) respectively.³

- (3) a. Leur avocat ne conteste pas que nous apportions _{SUBJ} une preuve inattaquable.
b. Leur avocat ne conteste pas que nous apportons _{IND} une preuve inattaquable.
‘Their lawyer does not deny that we have produced an irrefutable proof’

In the first stage of our investigation, we chose not to compare positive with negative sentences in order to avoid the effect of negation which may affect acceptability judgements by itself due to complexity issues (Hasson & Glucksberg 2006, Langacker 1991; Shuval & Hemforth 2008). Instead, we compared sentences based on different classes of verbs characterized by their mood requirements in their complement, corresponding to the intuition of standard speakers and given in ordinary dictionaries of French. Verbs allowing mood alternation linked to negation are compared to verbs with a stable mood requirement across polarity: descriptive factive verbs (e. g. *se rendre compte* ‘to realize’) in the first questionnaire (4), desiderative/mandative verbs (e. g. *vouloir* ‘to want’, *exiger* ‘to require’) in the second one (5).⁴

- (4) a. Paul ne croit pas que notre position [est _{IND} / soit _{SUBJ}] arrêtée.
‘Paul does not believe that our stance is fixed’
b. Le patron ne se rend pas compte qu’Hélène [est _{IND} / * soit _{SUBJ}] décidée à partir.
‘The boss does not realize that Helen has decided to leave’
- (5) a. Paul ne doute pas que la décision [est _{IND} / soit _{SUBJ}] prise.
‘Paul does not doubt that the decision is made’
b. La patron n'exige pas que l'expérience [* est _{IND} / soit _{SUBJ}] recommencée.
‘The boss does not require that the experiment be done another time’

The first questionnaire is devoted to the study of the polarity subjunctive: we test whether negation licenses the use of the subjunctive in the complement clause of verbs that require the indicative in the affirmative (see *penser* in (1)). The second is devoted to the study of polarity indicative: we test whether negation licenses the use of the indicative in the complement clause of verbs that require (or prefer) the subjunctive in the affirmative (see *douter* in (2)).

2.2. Running the experiment

³ The « out of ten »-notation is highly natural for French speakers. Grades in schools and universities are mostly on an « out of ten »- or « out of twenty »-notation.

⁴ Factive verbs in French are divided into two groups depending on their mood requirement:
– descriptive factives require the indicative: *se rendre compte que* (‘to realize’);
– evaluative factives (often labeled emotive) require the subjunctive : *regretter* (‘to regret’).

Both experiments used sixteen experimental items based on 8 matrix clauses. We created two lists such that each participant saw half of the items in indicative form and half in subjunctive form but never the same item in both conditions. Across lists, each item was presented equally often in both conditions. Each of the two lists was presented in two different randomizations. The experimental material was combined with 24 filler sentences most of which were part of an independent experiment on the relationship between subject inversion and information structure in French. Given that the questionnaire for subject inversion required the question/answer format, the items of the present questionnaire were also framed in the same format: (6) illustrates the actual items as presented to the subjects. Subjects had to rate a total of 40 items.

(6) [Two friends are talking about a colleague]

Friend 1 : Est-ce que je peux encore compter sur lui ?
‘Can I still count on him’

Friend 2 : Je ne crois pas que sa position est aussi éloignée de la tienne que tu le penses.
‘I don’t think that his position is as far from yours as you imagine’

Participants in the experiment were first year students in the Humanities. Approximately 75% were from the University Charles de Gaulle in Lille, and the rest from the University Paris Ouest. All of them were native speakers of French and students beginning college education just after the high school final exam in the French system (baccalauréat).⁵ The first year in humanities is a non selective program and the students were from various backgrounds, most probably not from the more socially or culturally favored ones given the rigid stratification of the French university system. 38 students took part in the first experiment, 41 in the second; none participated in both.

3. Results of experiment 1

Experiment 1 tested whether speakers have a solid grasp of the conditions in which polarity subjunctive can appear. In order to do that, we compared verbs (or predicates) allowing for polarity subjunctive (according to standard judgments), labeled PS verbs for ‘polarity subjunctive’, with verbs with a more or less rigid requirement for the indicative, labeled IR for ‘indicative required’.

- (7) a. PS verbs: *croire* ‘to believe’, *être évident* ‘to be evident’, *être convaincu* ‘to be convinced’, *avoir l’impression* ‘to have the impression’, *supposer* ‘to suppose’, *prétendre* ‘to claim’, *démontrer* ‘to show’, *s’ensuivre* ‘to follow’.
- b. IR verbs: *affirmer* ‘to state’, *dire* ‘to say’, *annoncer* ‘to announce’, *assurer* ‘to confirm’, *se rendre compte* ‘to realize’, *voir* ‘to see’, *réaliser* ‘to understand’, *repérer* ‘to find out’).

Each group of predicates can be split in two. The first group (PS) comprises 5 predicates expressing belief on the part of the subject, the speaker being neutral, or being among the believers (in the case of the impersonal ‘to be evident’); the other 3 verbs are different: with *prétendre*, the speaker suggests that s/he does not share the subject’s belief, and with *démontrer* and *s’ensuivre*, the belief is on the contrary grounded in logic. The second group (IR) comprises

⁵ In 2008, approximately 64 % of a generation had passed the ‘baccalaureat’.

verbs which, based on their semantic class (verbs of communication) allow for polarity subjunctive, but are, according to speakers' intuitions, judged to do so less easily than predicates in the first group. It also comprises descriptive factive verbs, which do not allow for the subjunctive in their complement. These factive verbs do not create a context that motivates the subjunctive (e.g. Godard 2013 ; see also Farkas 1992). Note that affording motivation for the indicative or the subjunctive does not mean that this mood will occur in effect, but that it is semantically possible (other factors may have to be taken into account).

- (8) The subjunctive is motivated when the speaker takes into account the fact that there may exist an agent who believes that *non-p* is possible. (Godard, 2013, p. 138)

Descriptive factive verbs precisely indicate that the speaker does not think that there may exist an agent who believes that *non-p* is possible.

3.1. Analysis: first step

All data were individually z-standardized for each participant in order to compensate for different usages of the acceptability scale. Figure 1 shows the mean z-standardized acceptability judgments for the two verb types (PS and IR) for indicative and subjunctive forms in their complement. All data were analyzed using R (R Development Core Team, 2009) and the R packages *lme4* (Bates & Maechler, 2009) and *languageR* (Baayen, 2008, Baayen et al., 2008). In order to test the role of verb type (PS, IR) and the subjunctive (subjunctive vs indicative) for accessibility, we ran a linear mixed-effects model analysis with Participants and Items as random effects and Verb Type and Subjunctive as fixed effects. To confirm the validity of the mixed effects analyses, we performed likelihood ratio tests comparing the full models with all fixed effects to reduced models. Estimates for fixed effects of the full model are presented in Table 1.

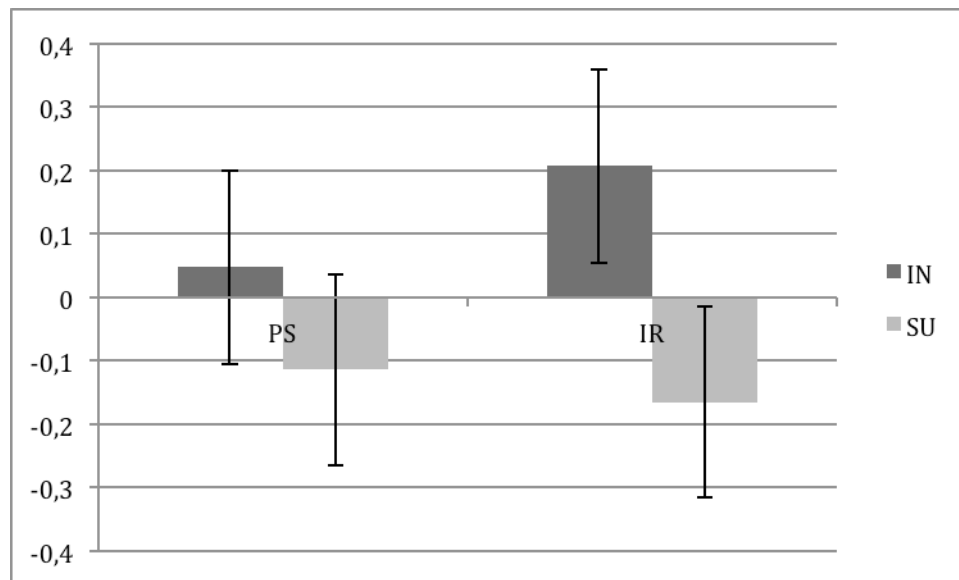


Figure 1: Z-scores of acceptability judgments for indicative and subjunctive for the two verb types. Error bars correspond to standard errors.

Fixed effects	β	SE	t value
(Intercept)	132.017	6.724	19.485
subSU	1.998	8.760	0.228
cond1IR	12.323	9.832	1.253
subSU:cond1IR	-27.261	12.759	-2.137

Table 1: Fixed effect estimates for the full model including Subjunctive and Verb type as fixed factors and Participant and Item as random factors

The statistical comparison between the full and the reduced models yielded a significant effect for the statistical interaction ($\chi^2(1)= 5.0252, p<.03$) but no main effect for the verb type ($\chi^2(2)= 4.0338, p>.13$).

- Sentences with subjunctives were judged significantly less acceptable than sentences with indicative forms in all sentences ($\chi^2(2)= 8.3007, p<.02$).
- Separate models for the two verb types show no reliable effect of Subjunctive for PS-verbs ($\chi^2(1)= 0.1028, p>0.70$) and a marginal dispreference for subjunctive forms for IR-verbs ($\chi^2(1)=2.737, p<0.10$).

3.2. Analysis: second step

In order to get clearer results, in a second step, we took into account a finer-grained classification of verbs based on their semantic content, as explained above. PS verbs were split into verbs of belief (BEL) and verbs involving some belief (BEL-I) while IR verbs were split into verbs of saying (SAY) and descriptive factive verbs (FACT). We focused on BEL verbs and FACT verbs, which are expected to contrast most.

- (9) a. PS verbs:
- Verbs of belief (BEL): *croire, être évident, être convaincu, avoir l'impression, supposer.*
 - Verbs involving some belief (BEL-I): *prétendre, démontrer, s'ensuivre.*
- b. IR verbs:
- Verbs of saying (SAY): *affirmer, dire, annoncer, assurer.*
 - Descriptive factive verbs (FACT): *se rendre compte de, voir, réaliser, repérer.*

We reiterated the very same treatment and obtained more interesting results, as presented in Figure 2a and Table 2.⁶

⁶ As before, all data were analyzed using R (R Development Core Team, 2009) and the R packages *lme4* (Bates & Maechler, 2009) and *languageR* (Baayen, 2008, Baayen et al., 2008). In order to test the role of verb type (BEL, BEL-I, SAY, FAC) and subjunctive form (subjunctive vs indicatif) we ran a linear mixed-effects model analysis with subjects and items as random effects and Verb Type and Subjunctif as fixed effects. To assess the validity of the mixed effects analyses, we performed likelihood ratio tests comparing the full models with all fixed effects to reduced models.

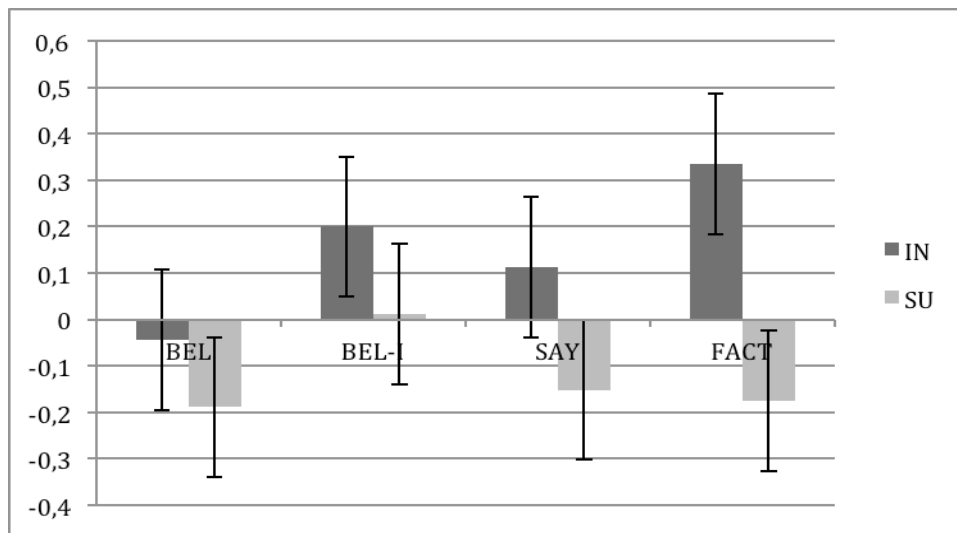


Figure 2a: Finer-grained categorization of verb-types. Error bars correspond to standard errors.

Fixed effects	β	SE	t-value
(Intercept)	128.647	8.085	15.912
subSU	-4.936	10.966	-0.450
verbsBEL-I	6.203	13.039	0.476
verbsSAY	3.150	12.238	0.257
verbsFACT	28.445	13.047	2.180
subSU:verbsBEL-I	18.772	17.623	1.065
subSU:verbsSAY	-9.399	16.948	-0.555
subSU:verbsFACT	-32.336	16.649	-1.942

Table 2: Fixed effect estimates for the full model including Subjunctive and Verb type as fixed factors and Participant and Item as random factors

The statistical comparison between the full and the reduced models yielded a marginally significant effect for the statistical interaction ($\chi^2(3)= 7.4749$, $p<.06$), but no main effect for the verb type ($\chi^2(6)= 10.543$, $p>.10$). Sentences with subjunctive were judged less acceptable than sentences with indicative forms ($\chi^2(4)= 11.233$, $p<.03$). Individual models for each verb type with Subjunctive as fixed factor and Participant and Item as random factors show a reliable effect of Subjunctive only for factive verbs ($\chi^2(1)= 5.6682$, $p< 0.02$; fixed effect estimates see Table 3; all other $ps >.50$).

Fixed effects	β	SE	t-value
(Intercept)	64.688	5.087	12.717
subSU	-15.017	6.203	-2.421

Table 3: Fixed effect estimates for the subset of factive verbs including Subjunctive fixed factor and Participant and Item as random factors

Discussion.

The strongest effect pertains to factive verbs: speakers do rate the subjunctive unnatural in the complement clause of descriptive factive verbs. Moreover, there is a clear contrast between verbs of belief (BEL) and factive (FACT) verbs: the subjunctive may be judged natural in the complement clause of negated verbs of belief while it is judged unnatural in with factive verbs. Even if we do not obtain a significant effect (possibly our data base is not big enough), there is a numerical difference between negated verbs of belief and other classes of verbs (see Figure 2b).

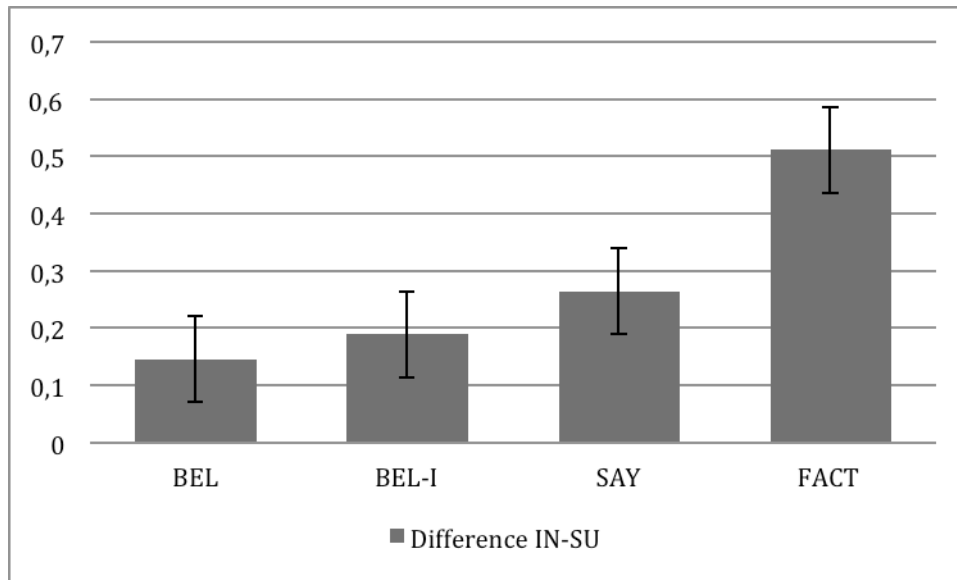


Figure 2b: Difference scores between indicative and subjunctive forms of the different verb classes. Error bars correspond to standard errors.

Two conclusions regarding our initial questions are already possible pending finer-grained investigations:

- Negation may trigger the occurrence of the subjunctive in the complement clause of certain types of verbs;
- Younger speakers are still sensitive to this phenomenon with verbs of belief.

The first conclusion has to be strengthened by a direct comparison between affirmative and negative sentences, to ensure that negation *per se* is solely responsible for the smaller difference in ratings of naturalness between the indicative and the subjunctive in complement clauses of negated verbs of belief. It must also be noted that there is no differential between BEL-I and SAY verbs: in fact, most of the verbs we used are verbs of communication that may very well behave in the same way regarding the possible occurrence of the indicative or the subjunctive. Here again, a direct comparison between positive and negative sentences is required in order to check whether negation *per se* favors the mood alternation in the complement clause.

4. Results of experiment 2

We compared verbs that take a subjunctive complement clause in an affirmative sentence (obligatorily or preferably, according to judgments on standard French) and allow the occurrence of polarity indicative (labeled PI for polarity indicative), on the one hand (see (2)), with verbs having a rigid requirement for the subjunctive (labeled SR for subjunctive required). The distinction corresponds to a different content for the complement clause: the first group takes a proposition denoting complement, the second an outcome denoting complement (see Ginzburg and Sag 2000).

(10) a. PI verbs: *avoir DET doute* ('to have (some) doubt'), *douter* ('to doubt'), *être contestable* ('it is highly controversial'), *contester* ('to contest'), *nier* ('to deny'), *être faux* ('it is false').

b. SR verbs: *obtenir* ('to obtain'), *attendre* [sth. from sb] ('to expect'), *demander* ('to ask'), *empêcher* ('to prevent'), *exiger* ('to demand'), *vouloir* ('to want'), *desirer* ('to wish'), *avoir l'intention* ('to intend').

In order to test the role of verb (or predicate) type (PI, SR) with respect to the mood of the complement clause, we ran a linear mixed-effects model analysis with Participants and Items as random effects and Verb Type and Subjunctive as fixed effects. Figure 3 shows the mean z-scores for the four conditions, Table 4 shows the estimates for the fixed effects of the full model. Likelihood ratio tests comparing the full models with all fixed effects to reduced models, showed a highly reliable interaction between Verb Type and the Subjunctive ($\chi^2(2)= 26.288, p<.001$) but no main effects (all ps > .20). Separate models for each verb type showed a reliable difference for the acceptability of indicative and subjunctive forms (PI verbs: $\chi^2(1)= 6.8808, p<.01$, SR-verbs: $\chi^2(1)= 14.618, p<.001$).

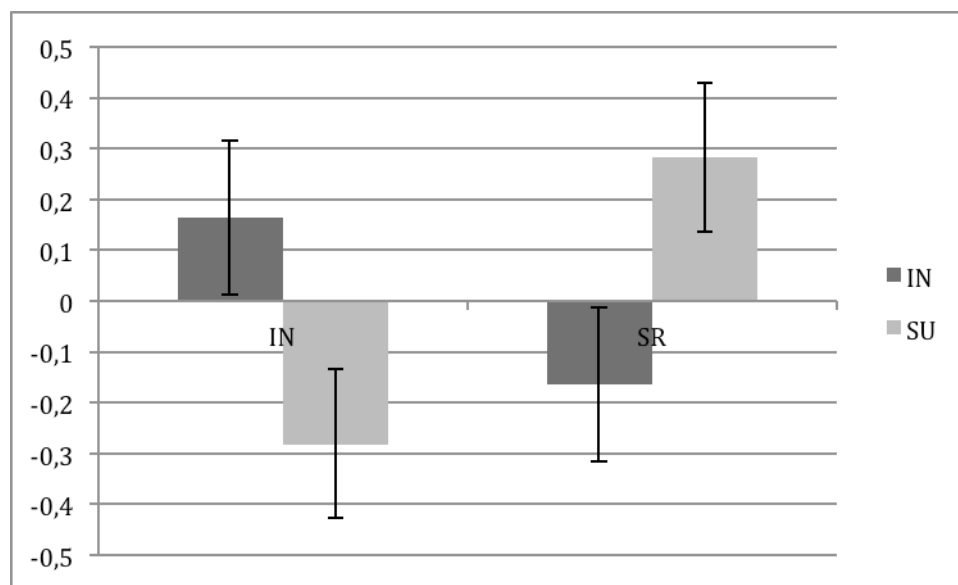


Figure 3: Z-scores of acceptability judgments for indicative and subjunctive for the two verb types. Error bars correspond to standard errors.

Fixed effects	β	SE	t value
(Intercept)	147.263	9.327	15.789
subSU	-26.280	8.664	-3.033
verbeSR	-20.467	13.190	-1.552
subjSU:verbeSR	62.569	12.253	5.107

Table 4: Fixed effect estimates for the full model including Subjunctive and Verb type as fixed factors and Participant and Item as random factors

We obtain a clear effect which confirms the initial description: the indicative may be judged natural in the complement clause of negated verbs taking a propositional complement, while it is judged unnatural with verbs requiring the subjunctive rigidly (according to standard French), and taking an outcome denoting complement.

In a second step, we focused on the import of the lexical class of the verb on the choice of the mood in the complement clause. Accordingly, we took into account a finer-grained classification of verbs on a semantic basis: PI verbs were split into intrinsically negative verbs (IN) and verbs involving a negative content (NC): the first group is roughly equivalent to ‘to not think that p’, and the second one to ‘to say that non p’, while we kept the group of verbs requiring a subjunctive as it was.

- (11) a. Intrinsically negative verbs (IN): *avoir* Det *doute*, *disconvenir*, *douter*, *être contestable*;
b. Verbs involving a negative content (NC): *contester*, *nier*, *être faux*.
c. SR verbs: *obtenir*, *attendre*, *demander*, *empêcher*, *exiger*, *vouloir*, *desirer*, *avoir l'intention*.

In order to test for possible effects of finer grained distinctions between the verb-types, we ran linear fixed effect models with Verb Type2 (IN, NC, SR)

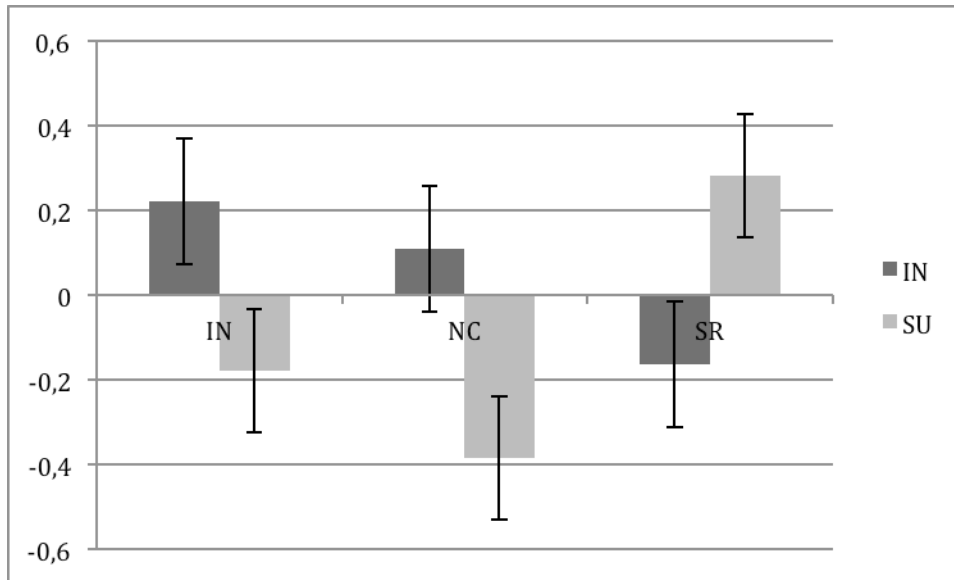


Figure 4: Finer-grained categorization of verb-types. Error bars correspond to standard errors.

Fixed effects	β	SE	t-value
(Intercept)	144.395	13.950	10.351
subSU	-23.008	12.205	-1.885
verbNC	5.737	19.728	0.291
verbSR	-17.599	16.609	-1.060
subSU: verbNC	-6.544	17.261	-0.379
subSU: SR	59.298	15.016	3.949

Table 5: Fixed effect estimates for the full model including Subjunctive form and Verb Type2 as fixed factors and Participant and Item as random factors

The statistical comparison between the full and the reduced models yielded a highly significant effect for the statistical interaction ($\chi^2(2)= 25.791, p<.001$), but neither a main effect for the subjunctive versus indicative form ($\chi^2(1)= 0.6474, p>.40$), nor a main effect of verb type ($\chi^2(2)= 1.1766, p>.50$). Individual models for each verb type with Subjunctive as fixed factor and Participant and Item as random factors show a marginal dispreference for the subjunctive for intrinsically negative verbs ($\chi^2(1)= 3.153, p< 0.08$), a significant dispreference of the subjunctive for negative content verbs ($\chi^2(1)= 6.0716, p< 0.02$), but a highly significant preference for the subjunctive for RS verbs ($\chi^2(1)= 14.618, p< 0.001$).

Discussion

The effects are strong. Clearly, negation does bring about the condition for the use of the indicative with intrinsically negative verbs (*douter*). It also impacts the choice of indicative with verbs involving a negative content (*nier*), but the conclusion there cannot be definitive. Given that they allow the indicative (as well as the subjunctive) in their complement clause in the affirmative, it is necessary to compare their use in the affirmative and the negative clauses in order to measure the influence of the negation

As expected, the negation does not impact the choice of mood for desiderative/mandative verbs, which resist the use of the indicative in their complement clause. Here, the subjunctive is motivated by the lexical semantics of the verb, according to (8). They differ from IN and NC

verbs, whose semantics corresponds to classes of verbs taking the indicative in the complement clause, when not negated.

Accordingly, we have a clear indication for IN verbs and an hint for NC verbs that double negation affords the use of the indicative. We take it as an indication that the use of subjunctive is sensitive to semantic factors.

5. Conclusion

We have presented the results of two questionnaires investigating the choice of the mood in the complement clause of negated verbs. To our knowledge, this is the first experimental approach to the subjunctive in contemporary French. As stressed in the first section, they tell us something about the competence of young average speakers: they tell us that their competence includes knowledge of the semantic/pragmatic conditions which motivate the subjunctive mood.

The ratings of the sentences in the questionnaires by young speakers of French indicate that they do not diverge from what is taken as the norm for the use of both moods. They abide by the mood requirement of descriptive factive verbs and desiderative/mandative verbs. Interestingly, these are the verbs where the syntactic requirement (subcategorization) and the semantic motivation are difficult to tease apart. It will be crucial to test whether the differential requirement among factives along the descriptive/evaluative divide (*se rendre compte* ‘to realize’ vs *regretter* ‘to regret’) is still in force: is it the case that evaluative factives allow for the subjunctive, and to which extent? (in standard French, only the subjunctive is acceptable in a clause such as the following: *On regrette bien que tu es* IND / *sois* SUBJ *pas là*, ‘We regret that you are not here’).

Mood alternation linked to negation was the center of our investigation: polarity subjunctive with verbs requiring the indicative in an affirmative clause and polarity indicative with negated negative verbs. We have an indication that negation does intervene in the choice of the mood in complement clauses. For polarity subjunctive (Exp 1), the significant interaction clearly shows that the acceptability of the subjunctive depends on the semantic class of the verbs (even though the simple effects are less conclusive). For polarity indicative (Exp 2), we similarly find that dependency on the verb class. The subjunctive is more or less acceptable, with a strong dispreference characterizing factive verbs only. It still remains to comfort the conclusion by comparing directly affirmative verbs and negated verbs.

References

- Auger, Julie. 1990. Les structures impersonnelles et l'alternance des modes en subordonnée, dans le français parlé de Québec. Centre international de recherche en aménagement linguistique, Québec.
- Bates, D., and M. Maëchle. 2009. *lme4*: linear mixed-effects models using S4 classes. Available at: <http://CRAN.R-project.org/package=lme4>.
- Baayen, R. H. 2008. *Analyzing Linguistic Data. A Practical Introduction to Statistics Using R*. Cambridge University Press.
- Baayen, R.H.; D.J. Davidson; D.M. Bates. 2008. Mixed-effects modeling with crossed random effects for subjects and items. *Journal of Memory and Language* 59: 390-412.
- Farkas, Donka F. 1992. On the Semantics of Subjunctive Complements. In P. Hirschbühler and K. Koerner (eds). *Romance Languages and Modern Linguistic Theory. Papers from the 20th Linguistic Symposium on Romance Languages (LSRL XX)*. Ottawa. Amsterdam / Philadelphia : John Benjamins, 69-103.
- Godard, D. 2013. Indicative and subjunctive mood in complement clauses: formal semantics and grammar writing. In C. Piñon (ed), *Empirical Issues in Syntax and Semantics* 9, 129-148. Available at www.cssp.cnrs.fr/eiss9.
- Grevisse, M. and A. Goosse. 2011. *Le Bon Usage*. Louvain: De Boeck-Duculot.

- Gross, M. 1978. Correspondance entre forme et sens à propos du subjonctif, *Langue française* 39. 49-65.
- Hasson, U and S. Glucksberg. 2006. Does understanding negation entail affirmation? An examination of negated metaphors. *Journal of Pragmatics* 38, 1015–1032.
- Langacker, Ronald W. 1991. *Foundations of cognitive grammar*, vol. 2, *Descriptive application*. Stanford University Press.
- NØlke, H. 1085. Le subjonctif, *Fragments d'une théorie énonciative*. *Langages* 80. 55-70.
- Poplack, S. 1992. The inherent variability of the French subjunctive. In C. Laeufer, C. and T. Morgan (eds), *Theoretical analyses in Romance linguistics*, 235-263. Amsterdam: Benjamins.
- Quer, Josep. 2001. Interpreting Mood. *Probus* 13. 81-111.
- R Development Core Team. 2009. *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.R-project.org>.
- Sand, J. 1983. Le subjonctif en français oral. *Actes du VIII^e Congrès des romanistes scandinaves*, Odense University Press, p. 303-313.
- Shuval, N. and B. Hemforth. 2008. Accessibility of negated constituents in reading and spoken language comprehension. *Journal of Intercultural Pragmatics*, 5 (4), pp. 445-469.
- Soutet, O. 2000. *Le subjonctif en français*. Paris: Ophrys.
- Vandergheynst, P. 1982. L'emploi des modes et des temps dans les subordonnées introduites par *que*, observations sur un corpus de français parlé, Mémoire de licence, Katholieke Universiteit te Leuven.