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Voice mismatch and contrast in French Right-Node Raising[1]

ANNE ABEILLÉ
Université Paris Cité, CNRS
AOI SHIRAISHI
University of Tokyo
BARBARA HEMFORTH
Université Paris Cité, CNRS

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Right-Node Raising is generally considered to impose stricter identity conditions than other kinds of ellipsis, such as VP ellipsis, according to Hankamer & Sag 1976 and Hardt 1993. In this paper, we investigate voice mismatch in French Right-Node Raising (RNR) through a corpus study and two experiments. We show that RNR with voice mismatch can be found in a written corpus (frTenTen 2012) and that many examples involve coordination of a reflexive active and a short passive form. We suggest this is because semantic contrast (here, between self and external agent) plays a role according to Hartmann (2000) and Abeillé and Mouret (2010). We ran two acceptability judgement experiments to test voice mismatch and semantic contrast. We did not find any penalty for voice mismatch with VP ellipsis but an interaction with semantic contrast. We also found an effect of semantic contrast when coordinating an active and a passive VP without participle ellipsis. We conclude that voice mismatch is acceptable with RNR and propose a Head-driven Phrase-Structure Grammar (HPSG) analysis, following Chaves (2014) and Shiraïshi et al. (2019).

KEYWORDS: contrast, ellipsis, French, passive, reflexive, Right-Node Raising, voice mismatch

1. INTRODUCTION

The possibility of voice mismatch has been a hot topic in the study of VP ellipsis since it undermines the deletion under identity approach, or structural approach to ellipsis (Merchant 2013). On the other hand, it is expected under semantics-

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based approaches to elliptical constructions (Ginzburg & Sag 2000 a.o.). Other kinds of ellipsis (gapping, sluicing) have been shown to resist voice mismatch, but Right-Node Raising (RNR) has not been considered in this respect. Different analyses have been proposed for RNR (Ross 1967, Kayne 1994, Chaves 2014) but none of them predict the existence of such mismatch.

1.1. *Voice mismatch and ellipsis*

Voice mismatch has been studied for VP ellipsis and is attested in English (Hardt 1993, Kehler 2000, Kertz 2013). Both active elided VPs with a passive antecedent (Examples (1a, c)) and the reverse (Example (1b)) (a passive elided VP with an active antecedent) are observed.

(1) (a) This problem was to have been looked into, but obviously nobody did ~~look into it~~. (Kehler 2000)
(b) The janitor must remove the trash whenever it is apparent that it should be ~~removed~~.
(c) Curacao lies outside the hurricane belt, but can still occasionally be smitten by hurricanes, as for example Omar did ~~smite it~~ in 2008. (Merchant 2013)

Merchant (2013) tries to reconcile the possibility of voice mismatch with a deletion under identity approach: he posits a VoiceP node and assumes that VP ellipsis takes place below VoiceP: so in this approach, there is no mismatch. (Figure 1, Figure 2).

(2) This problem was to have been looked into, but obviously nobody did.

This analysis makes two predictions: (i) VP ellipsis with voice mismatch should be as acceptable as with match and (ii) voice mismatch is only possible with small (VP) ellipsis but not with large (clausal) ellipsis.

Most of the time, there is a penalty associated with mismatch (Kim & Runner 2018). Different authors have proposed factors that favor or disfavor voice mismatch with VP ellipsis. According to Kehler (2000), asymmetric discourse relations between the source and the target such as Cause-Effect (Example (3a)) make voice mismatches more acceptable than symmetric discourse relations such as Resemblance (Example (3b)).

(3) (a) This problem was looked into by John, even though Bob already had ~~looked into the problem~~.
(b) #This problem was looked into by John, and Bill did too ~~look into the problem~~.

Kertz (2013) suggests that topic continuity plays an important role in VP ellipsis. In a series of experimental studies, she shows there is a penalty with voice mismatch

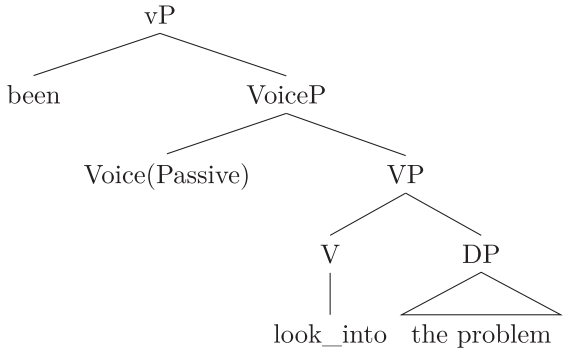


Figure 1
Passive structure from Merchant (2013)

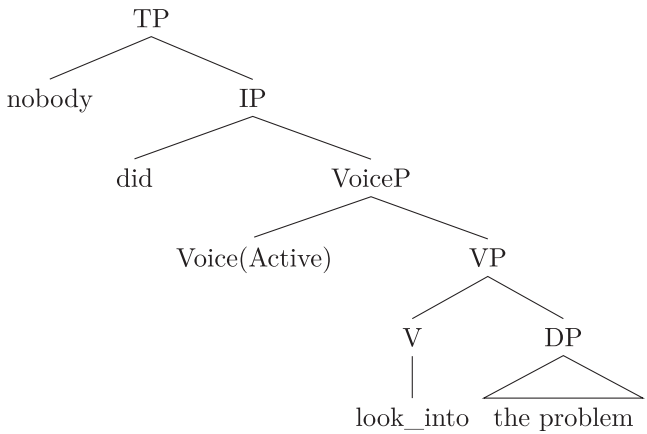


Figure 2
Active structure from Merchant (2013)

when the subjects are contrastive topics as in Example (4a). In Example (4b), on the other hand, the subject of the sentence with voice mismatch is not a contrastive topic (the agent is the same as in the source sentence) and the mismatch penalty is reduced.

(4) (a) #The incident was reported by the driver, and the pedestrian did ~~report the incident~~ too.
(b) The incident was reported by the driver, although he didn't really need to ~~report the incident~~.

She also suggests that the penalty for lack of topic continuity is independent of ellipsis.

From a different perspective, Arregui et al. (2006) assume that the grammar of ellipsis requires a syntactically matching antecedent for the elided constituent. Ellipsis is ungrammatical when no syntactically matching antecedent is available, despite the actual occurrence of such examples in naturally occurring speech. In case of ungrammaticality, the parser may however "recycle" a parsed constituent and thus give the illusion of grammaticality. In a series of experiments, they found a greater penalty for a passive elided VP with an active antecedent (Examples (1b), (5b)) than for an active elided VP with a passive antecedent (Examples (1c), (5a)).

(5) (a) The report was first read by the judge, and then the lawyer did too.
(b) The judge read the report first, and then the confession was.

The Recycling Hypothesis relies on earlier findings showing that a passive, as a non canonical construction, is more easily misrecalled as an active (Mehler 1963, Thuilier et al. 2020) than the other way around (an active being misrecalled as a passive). A passive-active mismatch may thus create an illusion of grammaticality because the speaker misrecalls the antecedent as active.

Poppels & Kehler (2019) tested the Recycling Hypothesis in a series of experiments where they found a general passive penalty: VP ellipsis with a passive antecedent is judged worse than with an active antecedent, even with voice match.

(6) (a) The judge read the report first, and then the lawyer did too.
(b) The report was first read by the judge, and then the confession was too.

They also challenge the Recycling Hypothesis by testing cataphoric VP ellipsis: if the ellipsis site precedes the source, there is no antecedent to be misrecalled.

(7) (a) Before the lawyer did, the judge read the report first. (active first, match)
(b) Before the confession was, the report was first read by the judge. (passive first, match)
(c) Before the lawyer did, the report was first read by the judge. (active first, mismatch)
(d) Before the confession was, the judge read the report first. (passive first, mismatch)

Poppels & Kehler (2019) found a mismatch penalty (Examples (7c), (7d)) and a passive first penalty (Examples (7b), (7d)) but no interaction between the two. This contradicts the Recycling Hypothesis that would predict that the mismatch in the passive first condition would be better since the passive could be misrecalled as active. They conclude that their results suggest a more general Passive Ellipsis Clause Penalty (PECP), accounting for the contrast between Examples (5-a) and (5-b), between Examples (6a) and (6b), and between Examples (7c) and (7d). To see whether PECP applies to other ellipsis, they tested sluicing and gapping in a pilot study: only sluicing led to a small non-significant passive penalty so that they concluded that PECP may be unique to VPE.

If Merchant 2013 is right, "larger" ellipsis should not allow for voice mismatch. Indeed, sluicing Example (8b) and gapping Example (8d) do not exhibit such acceptable mismatches.

(8) (a) Joe was murdered, but we don't know by who ~~he was murdered~~.
(b) *Joe was murdered, but we don't know who ~~murdered him~~.
(c) Some brought roses and others ~~brought~~ lilies.
(d) *Some brought roses and lilies ~~were brought~~ by others.

But contrary to Merchant (2013)'s predictions, in a corpus study, Miller (2014), as well as Kim & Runner (2022), found attested examples of voice mismatch with pseudogapping (Example (9a)), that should not be possible under a raising remnant analysis (Kuno 1981) (NP, Noun Phrase, PP, Prepositional Phrase; VP, Verb Phrase):

(9) (a) These savory waffles are ideal for brunch, served with a salad as you would ~~serve~~ a quiche. (COCA Mag) (Miller 2014)
(b) [VP served [PP t]] [PP with a salad] as you would [VP serve [NP t]] [NP a quiche]

We can conclude that structural identity-based approaches may either accept (Merchant 2013) or reject (Arregui et al. 2006) voice mismatch, and have a hard time predicting which cases of voice mismatch are acceptable and which are not. It also remains to be tested whether voice mismatch is acceptable for other types of ellipsis than VP ellipsis and pseudogapping.

In this paper, we focus on voice mismatch in RNR (Ross 1967, Chaves 2014) for French, which has been shown to accept some syntactic mismatches (Shiraishi et al. 2019).

1.2. *RNR and syntactic mismatch*

Right-Node Raising is often set apart from other elliptical constructions since the elided clause precedes the full clause.

Several syntactic analyses have been proposed for RNR. It has been analyzed in terms of rightward movement (Ross 1967, Hankamer 1971, Postal 1974, Gazdar 1981, Steedman 1996, Sabbagh 2007, Sabbagh 2014) (Example (10a)), multi-dominance (McCawley 1988, Goodall 1987, Moltmann 1992, Wilder 1999, Gracanin-Yuksek 2007, Bachrach & Katzir 2009) (Example (10b)) (Figure 3), and deletion under identity (Wexler & Culicover 1980, Kayne 1994, Hartmann 2000, Yatabe 2001, Beavers & Sag 2004, Yatabe 2012, Chaves 2014, Shiraishi et al. 2019) (Example (10c)).

(10) (a) [John likes _] [but Mary dislikes _] [bananas].
(b) [John likes (bananas)] [but Mary dislikes (bananas)].
(c) [John likes ~~bananas~~] [but Mary dislikes bananas].

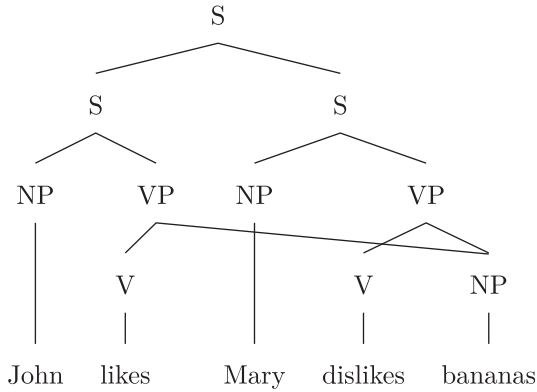


Figure 3
Simplified RNR analysis with multidominance

Syntactic mismatches between elided and peripheral material cast doubt on raising and multidominance theories. Under their most natural implementations, all of these analyses predict that voice mismatch should not be possible.

Chaves (2014) proposes that the missing and peripheral strings must have the same morphophonology and that the latter must be prosodically independent. Shiraishi et al. (2019) propose a revised deletion analysis based on lexeme identity instead of morphosyntactic identity, in order to capture polarity, preposition, and verb form mismatch. Verb form mismatch has been observed by Shiraishi et al. (2019) (Example (11a)) as well as polarity (Example (11b)) (Kayne 1994) or preposition mismatches (Example (11c)) (Abeillé et al. 2016):

(11) (a) Her publicist Max Clifford said: I think she's going to be remembered as a young girl who has ~~saved an awful lot of lives~~, and who will, save an awful lot of lives. (news.bbc.co.uk/ 2009/03/22)
(b) Mary bought ~~some books about linguistics~~, but John didn't buy any books about linguistics. (Kayne (1994): 146, fn.19)
(c) They were also as liberal ~~as any other age group~~ or more liberal than any other age group in the 1986 through 1989 surveys (Wall Street Journal, PennTreeBank; PTB)

Some examples of voice mismatches can also be found in English, but it is not easy to tell RNR apart from cataphoric VP ellipsis.

(12) (a) You can also go to the profile who was recommended by Mr. XY. Now, on this profile you will obviously find that he has ~~recommended Mr. XY~~ (or he was) recommended by Mr. XY. (Internet, 2011/06/14)
(b) Please tell me who has ~~shaved~~ and who was shaved.

Other languages such as German may have voice mismatch in RNR too (without having VP ellipsis) (examples from B. Crysmann, pc).

(13) (a) Einige haben sich gleich freiwillig ~~angemeldet~~, die
Some have self immediately voluntarily ~~registered~~, the
restlichen wurden dann zwangsweise angemeldet.
rest were then by force registered.
"Some (registered) themselves voluntarily straight away, the others were later registered by force."

(b) Bitte sag mir, wer hat sich ~~rasiert~~ und wer wurde rasiert.
Please tell me, who has himself ~~shaved~~ and who was shaved.
(corresponds to Example (12b))

Some examples of voice mismatches can be found for French as well (Abeillé et al. 2016).

(14) Ce pharmacien doit des explications à ceux
This pharmacist owes INDEF.PL explanations to those
qui se sont ~~mobilisés pour lui~~ ou qui ont
REL.SUBJ REFL AUX or REL.SUBJ have
été mobilisés pour lui.
been mobilized for him.
"This pharmacist owes explanations to those who rallied to his cause, or who were rallied to it." (www.ipreunion.com, 2013)

(15) donner la parole à ceux qu' on a ~~privés de dire~~ ou
give the voice to those REL.OBJ one has ~~deprived of saying~~ or
qui sont privés de dire.
REL.SUBJ are deprived of saying.
let those speak that one has or who are deprived of talking
(www.cemea.asso.fr, 1997)

In Examples (14) and (15), the missing past participle in the first conjunct corresponds to the passive participle in the second conjunct. In French, as in English, past participle and passive participle are syncretic forms. But unlike English, French does not have VP ellipsis with auxiliaries (Emonds 1987; Abeillé & Godard 2002), be they followed by a past or a passive participle (*avoir*, *être*).[2]

(16) (a) *Jean n' est pas convaincu, mais Paul est ~~convaincu~~.
Jean NEG is NEG convinced, but Paul is
'Jean isn't convinced, but Paul is.'

[2] It has been argued that French allows VPE after some modal verbs (see, e.g., Busquets & Denis 2001, Dagnac 2010), but there is a general consensus that it is impossible after tense and passive auxiliaries.

(b) *Jean a fini son travail, mais Marie n' a pas ~~fini~~.
Jean has finished his work, but Marie NEG has NEG
"Jean has finished his work, but Marie hasn't."

1.3. *RNR and semantic contrast*

According to Hartmann (2000) and Ha (2008), RNR needs to have a semantic contrast (contrasting values inside a set of alternatives) between the predicates in the sequences (typically conjuncts) sharing the peripheral sequence (e.g., *detests* and *likes* in Example (17a) and *has* and *have not* in Example (17b)) (see Rooth 1992 for a formal definition of semantic contrast).

(17) (a) John DETESTS ~~spinach~~ and Mary LIKES spinach. (Chaves 2014: 834)
(b) Sandy has ~~been helping us with the job~~ and you have not been helping us with the job. (Pullum & Zwicky 1986)

As pointed out by Chaves, following Kentner et al. (2008), this semantic contrast does not always lead to typical contrastive focus intonation, even if it may, as noted by the capital letters in Example (17a). In an English corpus study (Penn Treebank), Bîlbîie (2013) found that most RNR examples involved polarity, modality, aspect, or tense contrast (Examples (18), see also, Example (11a) above with tense contrast).

(18) (a) Did you ~~say what I said you said~~ or did you not say what I said you said… ? (brwn-4498, PTB)
(b) But the South is ~~engaged in a wide-sweeping urbanization~~, and has been for the past century, engaged in a wide-sweeping urbanization… (brwn-16897, PTB)
(c) Who is ~~making the criminal law here~~ and who should be making the criminal law here ? (wsj-6370, PTB)

We call this the "contrast condition on RNR", and, to the best of our knowledge, it has not been tested experimentally. In the absence of such contrast, syntactically well-formed RNR are less acceptable, as shown by the intuitive difference between Examples (19a) and (19b):[3]

(19) (a) Bill likes ~~the TV show~~, but Mary dislikes the TV show.
(b) *Bill likes ~~the TV show~~, and Mary likes the TV show. Ha (2007:2, ex (6))
(c) Bill likes the TV show and Mary (does) too.

The unacceptability of Example (19b) shows that subject contrast is not enough, and in that case, VPE (or stripping) is preferred, as in Example (19c).

[3] As noted by a reviewer, a degree contrast on the verbs is possible too: BILL LIKES, AND MARY ABSOLUTELY ADORES THE TV SHOW (see also Example (11c) above with degree contrast.

For French, Abeillé & Mouret (2010) conducted a study on written (newspaper) and spoken (radio) corpora. They found that most RNR examples displayed polarity, tense, or modality contrast between the two verbal conjuncts, as in the following examples (see also Example (15) above which displays past/present tense contrast.

(20) (a) Elle s'appelait ~~Christine Sprenger~~, et elle s'appelle encore,
She was called ~~Christine Sprenger~~, and she is called still,
Christine Sprenger.
Christine Sprenger.
"Her name was, and her name still is, Christine Sprenger." (France Inter, Ester corpus)

(b) Il ne pouvait ~~rien lui refuser~~, il ne voulait
He NEG could ~~nothing to.her refuse~~, he NEG wanted
rien lui refuser
nothing to.her refuse
"He could not refuse her anything, nor did he want to" (France Info, Ester corpus)

They also observe a tendency towards topic continuity, with VP coordination (with the same subject) rather than clausal coordination, in naturally occurring examples of RNR, although it is not always observed in the linguistic literature, Example (19a).

Given the lack of empirical data on voice mismatch and semantic contrast in RNR, we investigate French RNR in comparison with previous studies on voice mismatch in VP ellipsis. Among other differences, RNR differs from VP ellipsis since: (i) almost anything can be elided (not just a VP or a predicate phrase), (ii) the ellipsis site precedes the full clause, and (iii) RNR must be intrasentential, unlike VPE. In what follows, we limit ourselves to (VP) RNR in coordinated clauses.

In Section 2 of this paper, we present the results of a corpus study on voice mismatch in French RNR. In Section 3, we report on the results of an acceptability judgement experiment on VP RNR, showing no mismatch penalty but a possible effect of semantic contrast. In Section 4, we present a second experiment which confirms a semantic contrast effect in coordinated clauses independently of VP RNR. In the last section, we sketch a Head-driven Phrase-Structure Grammar (HPSG) analysis based on lexeme identity, following Shiraishi et al. 2019.

2. A CORPUS STUDY ON VOICE MISMATCH IN FRENCH RNR

We first conducted an informal search on the Internet, with conjoined active and passive auxiliaries. Short passives are easier to find than long passives (with a "par" (by) phrase). RNR involving an active verb with an NP complement and a long passive verb as in Example (21) are not very natural (Abeillé et al. 2016).

(21) ?Le ballon aura ~~touché l'un des joueurs~~ ou aura
The ball have.FUT ~~touched one of the players~~ or have.FUT
été touché par l'un des joueurs sur le terrain.
been touched by one of.DET.M.PL players on the field.
'The ball will have or will have been touched by one of the players on the field.' (basketsarthe.dyndns.org, 2009)

We mostly found examples of voice mismatch with reflexive active verbs, as in Example (22) from a newspaper article:

(22) Tous ceux qui se sont ~~installés illégalement sur ces terres~~ ou
all those REL.SUBJ REFL AUX ~~installed illegally on these lands~~ or
ont été installés illégalement sur ces terres doivent quitter
have been installed illegally on these lands must leave
les lieux.
the premises
"All those who have or have been installed illegally on these lands must leave the premises." (Le Monde, 2017/12/14)

We then did a more systematic search on the web corpus frTenTen 2012 (about 10 billion words, Baroni et al. 2009) for sequences of coordinated relative clauses with different voice auxiliaries and for sequences with coordination of different voice auxiliaries. We searched for the following sequences :

qui se sont et/ou qui ont été ("who se(reflexive) are and/or who have been'), *qui ont été et/ou qui se sont* ("who have been and/or who se(reflexive) are"), *qui s'est et/ou qui a été* ("who se(reflexive) is and/or who has been"), *qui a été et/ou qui s'est* ("who has been and/or who se(reflexive) is"), *qu'on a et/ou qui a/ont été* ("that one has and/or that has/have been"), *se sont et/ou ont été* ("se(reflexive) are and/or have been"), *ont été et/ou se sont* ("have been and/or se(reflexive) are"), *s'est et/ou a été* ("se(reflexive) is and/or has been"), *a été et/ou s'est* ("has been and/or se(reflexive) is").

French reflexive verbs come in different varieties (Melis 1990, Barque & Candito 2019). We only kept those which display an argumental reflexive. We thus left aside cases without a non reflexive counterpart, be they intrinsic reflexives (*s'évanouir* "faint"), mediopassives, or anticausatives, as in Example (23).

(23) Renouer […] nouer ce qui a été ~~dénoué~~ ou s'est dénoué.
Retie […] tie DEM REL has been ~~untied~~ or REFL is untied
"Retie; tie what has been or what has untied" (Trésor de la langue française, cnrtl.fr)

The results are provided in Table 1. We do not report the strings which returned no hits.

We found 27 examples of RNR with voice mismatch in frTenTen 2012. Both active-passive (Example (24a)) and passive-active (Example (24b)) orders are

Sequences	No. of occurrences (active-passive)	No. of occurrences (passive-active)
qui se sont ou qui ont été/qui ont été ou qui se sont	1	1
se sont ou ont été/ont été ou se sont	4	8
se sont et ont été/ ont été et se sont	1	12
Total	6	21

Table 1
RNR with voice mismatch in frTenTen12 corpus.

attested but the latter are more frequent (21 out of 27).[4] This is difficult to compare with previous findings on voice mismatch with VP ellipsis (Section 1.1): Arregui et al. (2006) found that passive-active mismatch was easier than active-passive mismatch, and proposed a processing explanation, but, in the case of VPE, the full antecedent precedes the elliptical VP, and can be misrecalled, while in RNR, the ellipsis site precedes the peripheral material. As mentioned before, Poppels & Kehler (2019) proposed a more general passive penalty for VP ellipsis, but in our data, the first elided predicate is actually more often the passive one.

(24) (a) Plusieurs coordinateurs se sont ~~proposés~~ ou ont été proposés.
Several coordinators REFL AUX - or have been proposed.
"Several coordinators have proposed themselves or have been proposed." (convergence-sp.org, 2012-02-25)

(b) (about candidates in a competition)
Les prestations de ceux-ci montrent qu' ils ont été
The performances of them show that they have been
~~préparés sérieusement~~ ou se sont préparés sérieusement.
- or REFL AUX prepared seriously
"Their performances show that they have been or have prepared themselves seriously." (artspla-site-austral.ac-reunion.fr, 2012-02-28)

All examples that we found involve a reflexive active and a passive. We did not find any examples with a non reflexive active and a passive. Reflexives have been argued to bear some similarities with passives in French. They use the same *être* (be) auxiliary as passives, and the participle obeys the same (subject) agreement pattern (non reflexive transitive verbs have the *avoir* (have) auxiliary and the participle does not agree with the subject) (Abeillé et al. 1998, Abeillé & Godard 2002):

[4] We also found more cases of "ou" (or) disjunctions than "et" (and) conjunctions. Due to the lack of syntactic annotations in the corpus, we cannot compare the mismatch cases with the number of match VP RNR. We therefore compared them to the general case of coordinations of the type "qui v et/ou qui v" (who v and/or who v), for which we found 30,795 for "et" and 7,241 for "ou", so we find an overrepresentation of "ou" (or) in our RNR examples.

(25) (a) Marie a lavé la voiture.
Marie has washed the car
"Marie has washed the car."
(b) Marie s' est lavée.
Marie REFL is washed
"Marie has washed"
(c) La voiture sera lavée.
The car be.FUT washed
"The car will be washed."

From a derivational perspective, some authors treat French SE verbs as intransitive unaccusatives, like passives (Wehrli 1986): SE absorbs accusative case or SE prevents the verb from assigning case to its object, which raises to subject position (see also Grimshaw 1982 for an analysis of Romance reflexives as intransitive verbs, inside a non derivational framework). In this approach, there is less syntactic mismatch between a reflexive active and a passive, since both have an empty object position, than between a transitive active and a passive.

However, this unaccusative approach of passives is controversial. Sells et al. (1987) show that reflexive predicates vary cross-linguistically in the mapping between the lexicon, syntax, and semantics, in particular, as being closed or open predicates. Labelle (2008) argues that the French *se* verb is an open predicate, since it can be transitive and have another reflexive marker (Example ((26)): she proposes that *se* does not reduce the argument structure of the verb and that the DP that surfaces in subject position is the external argument. We follow this proposal. For more on our syntactic analysis, which does not rely on syntactic movement, see Section 5.2 below.

(26) Quand le député-maire se fait des cadeaux à lui-même.
when the deputy-mayor REFL make.PRES.3S INDEF.PL gifts to himself
"When the deputy-mayor makes gifts to himself…"

From a semantic perspective, in our corpus examples (as in Example (24)), the reflexive and the (agentless) passive verbs obey the semantic contrast condition on RNR seen above (Section 1.3), since one involves a reflexive predicate (self agent) and the other the same predicate with an external (unknown or implicit) agent. In an example of a non reflexive active followed by a passive (Example (27a)), on the other hand, the two conjuncts do not exhibit a simple semantic contrast, since one has an unknown patient and the other an unknown agent.

(27) (a) ??Paul a ~~convaincu~~ et son frère a été convaincu.
Paul has ~~convinced~~ and his brother has been convinced
"Paul has and his brother has been convinced."
(b) ??Paul has ~~shaved~~ and his brother has been shaved.

Furthermore, from a discourse perspective, reflexives may also be argued to share some properties with passives, since in our examples, they also keep topic

continuity (same subject) better than non reflexive actives, a condition independently observed by (Kertz 2013) for English VPE. To conclude, we suggest that the tendency found in the corpus for examples with a (intransitive) reflexive active and a passive (and not with a transitive active and a passive) may not come from syntax (assuming a reflexive verb has an empty object position like a passive) but rather from semantics, since reflexives/short passives allow a contrast between self and external agent, and also from discourse since they assure topic continuity.

3. Experiment 1: Testing RNR with voice mismatch

Our corpus data lead us to suppose that RNR with voice mismatch can be acceptable. We conducted two acceptability judgement experiments in order to test both the effect of voice mismatch and the effect of semantic contrast on French RNR. We tested whether voice match and semantic contrast play a role and whether there is an interaction between the two factors. To the best of our knowledge, semantic contrast has not been tested experimentally so far (see Section 1.3 above).

3.1. *Materials*

The materials for Experiment 1 were inspired by the examples from the corpus study, with two conjoined relative clauses and a shared participle. We constructed 20 target items with four conditions: ± match, ± contrast (Example (28)).[5] All conditions have topic continuity with the same subject. In the mismatch conditions, we always have active-passive order, in order to avoid a penalty predicted by Arregui et al. (2006)'s Recycling Hypothesis and Poppels & Kehler (2019)'s Passive Ellipsis Penalty. In the conditions with semantic contrast, the thematic roles of the antecedent of the relative clauses are contrasted with an agent in the first clause and a patient in the second clause. In the mismatch condition, the agent of the predicate is thus the subject of the (reflexive) active, while it is unspecified in the passive (Example (28a)). In the match condition, the agent is the subject of the reflexive active and the indefinite "on" of the non reflexive active (Example (28c)). In the conditions without contrast, the antecedent is always a patient: the agent is indefinite (on) or unspecified in the mismatch condition (Example (28b)), and is unspecified in the match condition (Example (28d)). Notice that in this last condition (no mismatch, no agent contrast), the auxiliary past tenses are as similar as possible (imperfect and perfect).

(28) Materials for Experiment 1

– match +contrast a. Il s'agit d'Eglises orientales qui se sont, ou qui ont été rattachées à Rome.

[5] Abeillé et al. (2016) ran a previous version of Experiment 1 with only 12 target items, which did not show a mismatch effect either but a main effect of semantic contrast (p.18).

		"These are Oriental Churches which have, or which have been attached to Rome."
– match	– contrast	b. Il s'agit d'Eglises orientales qu'on a, ou qui ont été rattachées à Rome. "These are Oriental churches which one has, or which have been attached to Rome."
+ match	+ contrast	c. Il s'agit d'Eglises orientales qui se sont, ou qu'on a rattachées à Rome. "These are Oriental churches which have, or which one has attached to Rome."
+match	– contrast	d. Il s'agit d'Eglises orientales qui étaient, ou qui ont été rattachées à Rome. "These are Oriental churches which were or which have been attached to Rome."

20 target items were created, each of them in the four conditions described above. They were distributed across four lists using a Latin Square design, such that each participant saw five items in each condition but never the same item in more than one condition. Target items and 40 unrelated fillers were presented in a random order which was different for each participant. The full set of items can be found in the OSF-project: RNR-Materials (https://osf.io/2pdnj/). Fillers were French garden-path sentences based on materials from (Paape et al. 2018). These fillers had the advantage of spanning a wide range of acceptability (from difficult garden-paths with a mean acceptability of 4.9 to easy non-garden-paths with a mean acceptability of 7.7, on a 0–10 scale).

3.2. *Procedure*

We conducted the online experiment on IbexFarm (Drummond 2010), using a server at the University Paris Cité for data storage. Before starting the experiment, subjects provided information about their age, native language, and gender and gave their written consent to participate in the experiment. For each experimental trial, participants read a sentence and judged its acceptability on a scale from 0 (not at all acceptable) to 10 (fully acceptable).[6] The duration of the experiment was 15 minutes on average. Each experimental session started with three practice items.

48 participants (22 female, mean age: 30 years), recruited on Prolific, with the constraints that they currently live in France and only spoke French when growing up, judged the acceptability of the sentences on a scale of 0 to 10 and answered simple comprehension questions. Two participants were excluded from the analysis

[6] The 0–10 scale has been used successfully in a number of recent experiments on French (Shiraishi et al. 2019, Abeillé et al. 2020, An & Abeillé 2021), and it is close to the rating scale used in the French school system.

for answering less than 80% of the questions correctly. All participants received £2.20 via the Prolific platform.[7]

3.3. *Results*

Given that we obtained acceptability judgements from our participants, which do not fulfill requirements for linear mixed models, we analyzed the results with cumulative link mixed models using the clmm function in the ordinal package in R (Christensen 2019). Figures in this paper show means and confidence intervals for convenience since most readers are familiar with this kind of data presentation, although models for data analysis are based on the raw ordinal data resulting from the acceptability judgements. Independent variables were voice mismatch and semantic contrast. They were centered around zero for statistical analyses. Participants and items were included as random variables. Only intercept models could be run due to convergence failure of more complex models (model equation: clmm(judgment = contrast∗match + (1|participant)+(1|item))). The results are given in Figure 4.[8]

While acceptability judgements across conditions are all very high (7–8 out of 10), we did not find any significant effect of voice mismatch. We did, however, find a significant interaction of Match and Contrast, with Contrast leading to

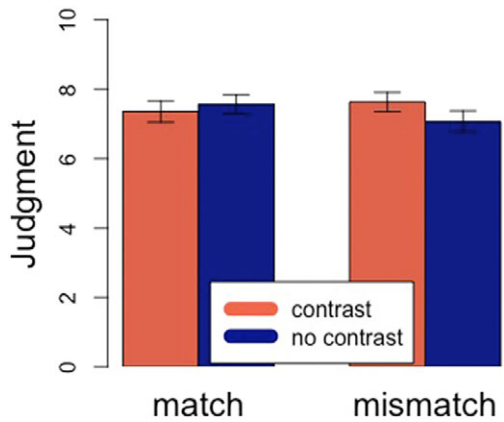


Figure 4
(Color online) Results of Experiment 1 on VP RNR

[7] We actually ran this experiment twice, once with 19 distractors and once with 40 distractors. Since the patterns of results from both experiments are nearly identical, we will only present results from the latter experiment.

[8] No violations of the proportional odds assumption were found in any analysis in this paper when applying the nominal option in clmm2 separately for each factor (clmm2 analyses did not include random factors).

higher acceptability ratings in the mismatch condition. No other effects were significant (interaction effect: $\beta = -.75, st.error = .24, z = -3.114, p < .002$).

In the match condition, the contrast condition (Example (28c)) involves two active auxiliaries (*qui se sont ou qu'on a*), whereas the no contrast condition (Example (28d)) involves two passive auxiliaries (*qui étaient ou qui ont été*), but there was no significant difference there. In the mismatch condition, the contrast condition (Example (28a)) involves an active reflexive and a passive (*qui se sont ou qui ont été*), while the no contrast condition (Example (28b)) involves a non reflexive active and a passive (*qu'on a ou qui ont été*), and we find a significant difference in favor of the former ($\beta = .50, st.error = .25, z = 2.034, p < .05$).

Unlike the voice mismatch penalty observed in previous experiments on English, VP ellipsis (Arregui et al. 2006, Kertz 2013, Poppels & Kehler 2019 a.o.), we did not find a mismatch penalty: the target items with voice mismatch are as acceptable as the items with voice match. As predicted by Hartmann (2000), Ha (2008), we found a penalty for items without semantic contrast but only in the case of voice mismatch. This does, however, not necessarily mean that the contrast effects depend on mismatch (see Experiment 2 below). The lack of an effect in the match condition may also be due to the minimal difference between the two past tense forms in the +match −contrast condition (Example (28d)), which can be interpreted as aspect contrast between imperfect and perfect.

One may attribute the high acceptability of RNR with voice mismatch to the syncretism between active and passive participles. However, Shiraishi et al. (2019) found that RNR with verb form mismatch without syncretism is highly acceptable in French.

One may also consider the VoiceP hypothesis to play a role for French. If we follow Merchant (2013)'s proposal, there is no syntactic mismatch between active and passive. The structure for active-passive would involve the same VP as passive-passive:

(29) (a) On a [VoiceP [VP rattaché les Eglises à Rome]].
"one has attached the churches to Rome." (Figure 5)

(b) Les Eglises ont été [VoiceP [VP rattachées ~~les Eglises~~ à Rome.]]
"the churches have been attached to Rome." (Figure 6)

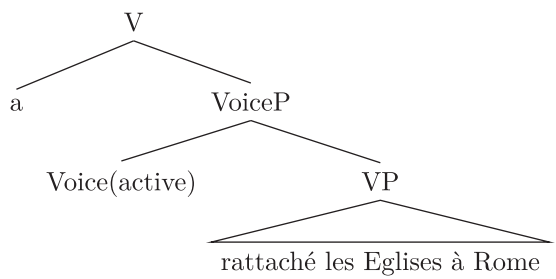


Figure 5
Active structure with VoiceP

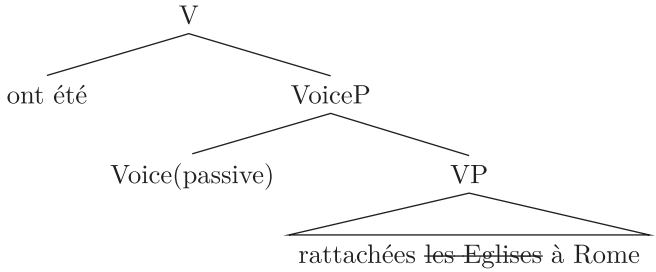


Figure 6
Passive structure with VoiceP

What about reflexives? If they are similar to passives (syntactically intransitives, with an object raised to subject position (Wehrli 1986)), our (Example (28a)) condition (reflexive and passive) would be a case of match and our (Example (28c)) condition (reflexive and active) would be a case of mismatch. However, we did not find a significant difference between the two ($p>.40$). On the other hand, Labelle (2008) has argued that reflexive is a specific voice in French, with its own VoiceP, different from (non reflexive) active and passive:

(30) les Eglises se sont [VoiceP [VP rattachées à Rome.]]
the churches REFL AUX attached to Rome.
"The churches have attached themselves to Rome." (Figure 7)

Under Labelle's view, there would be voice mismatch also in the (Example (28c)) (reflexive-active) condition. But the reflexive-active condition (with contrast) was rated higher than the match (passive-passive) (Example (28d)) condition (without contrast).

We conclude that the effect of structural identity (with voice mismatch under some analyses, without mismatch under a VoiceP analysis) is not sufficient to explain our data, and that semantic contrast plays a role.

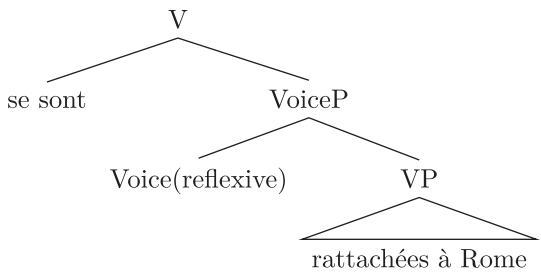


Figure 7
Reflexive structure with VoiceP

As for semantic contrast (Hartmann 2000, Ha 2008), we found an interaction with voice mismatch in Experiment 1, so that the effect of contrast was significant in the mismatch condition. [9] Since we expect this effect to be independent from voice mismatch, we ran a second experiment without voice mismatch.

4. Experiment 2: Contrast effects without voice mismatch

Experiment 2 was designed to test whether semantic contrast plays a role independently of voice mismatch. We therefore used materials similar to Experiment 1 but with the participle repeated and not elided. Most of the time, a final phrase was shared between the two conjuncts (and, hence, could be argued to be elided in the first conjunct). In Example (31), it is the PP à Rome ("to Rome"). We applied the same 2x2 design (± match, ± contrast) as in Experiment 1.

(31) Materials for Experiment 2

– match	+contrast	a. Il s'agit d'Eglises orientales qui se sont rattachées, ou qui ont été rattachées à Rome. "These are Oriental Churches that attached themselves or that were attached to Rome."
– match	– contrast	b. Il s'agit d'Eglises orientales qu'on a rattachées, ou qui ont été rattachées à Rome. "These are Oriental churches that one has attached or that have been attached to Rome."
+match	+contrast	c. Il s'agit d'Eglises orientales qui se sont rattachées, ou qu'on a rattachées à Rome. "These are Oriental churches that attached themselves, or that one has attached to Rome."
+match	– contrast	d. Il s'agit d'Eglises orientales qui étaient rattachées, ou qui ont été rattachées à Rome. "These are Oriental churches that were attached or that have been attached to Rome."

20 target items were created, each in the four conditions described above. Target items and 16 unrelated fillers were distributed across four lists using a Latin Square design and presented in a random order which was different for each participant.

The filler items came from an unrelated experiment, on the attachment of relative clauses to coordinated noun phrases as in Example (32) (Hedier et al. 2021).

[9] As noted by a reviewer, Kim & Runner (2018) also found that acceptability of voice mismatch in VPE can be modulated by more general (not ellipsis specific) semantic or discourse constraints. However, they always found a residual VPE-specific voice mismatch penalty, that we do not observe in French RNR with voice mismatch.

(32) Les assiettes et les fourchettes qui se trouvent sur l'étagère sont rayées.
"The plates and the forks that are on the shelf are scratched."

4.1. *Procedure*

The procedure in this experiment was nearly identical to Experiment 1. The only difference was that participants judged sentence acceptability on a scale from 1 (not at all acceptable) to 5 (fully acceptable), since this scale was used by the unrelated experiment which provided the filler items.[10] The duration of the experiment was 10 minutes on average.

Data from 54 French native speakers (32 female), recruited on the RISC web site (http://www.risc.cnrs.fr/) who volunteered to participate in the online experiment on Ibex (Drummond 2010) were analyzed in this experiment. The results from one participant who was not a native speaker of French were excluded from the analyses. The age of the participants ranged from 18 to 69, with a mean age of 31 years.

4.2. *Results*

We analyzed the results with cumulative link mixed models mixed effects regression models using the clmm function in the ordinal package in R (Christensen 2019). As before, independent variables were voice mismatch and semantic contrast. They were centered around zero for statistical analyses. Participants and items were included as random variables. Convergence failures made it impossible to include random slopes for the fixed factors. The results are given in Figure 8.

Even without VP RNR, we could establish a significant effect of semantic contrast with an advantage for the +contrast conditions (contrast: $\beta = -0.4744, st.error = .1367, z = -3.472, p < .001$). We also found an advantage for the mismatch condition (match: $\beta = 0.3546, st.error = 0.1312, z = 2.701, p < .01$) but no interaction between the two factors.

4.3. *Discussion*

The +contrast conditions received higher acceptability ratings than the −contrast conditions even without participle ellipsis. This shows that the contrast effect shown in Experiment 1 on VP RNR is more general. This confirms Hartmann (2000), Ha (2008), and Abeillé & Mouret (2010)'s contrast condition on RNR proposed for English, German, and French. It is also possible that a semantic contrast between

[10] To our experience, switching between a 0 to 10 scale (Experiment 1) and a 1 to 5 scale (Experiment 2) has never resulted in relevant changes in results.

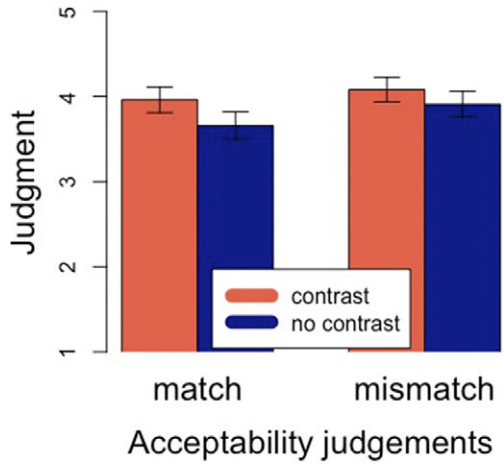


Figure 8
(Color online) Results of Experiment 2 on PP RNR

two coordinate predicates is an independent requirement of verbal/clausal coordination.

The advantage for the mismatch condition may be the consequence of the fact that the items were based on naturalistic items with mismatch from the corpus study, while match items were adapted from them. It may be possible that factors not included in this study make the mismatch condition more natural. This would be the topic of future studies.

5. An HPSG analysis

Following Chaves (2014), Shiraishi et al. (2019), we show how an HPSG analysis can account for our data.

5.1. *Previous analyses of RNR*

As noted earlier (see Section 1.2), several analyses have been proposed for RNR. Even though a movement analysis may be reconciled with mismatch, various arguments have been proposed against movement analyses (for overall discussion, see Beavers & Sag 2004, Bachrach & Katzir 2009 a.o.), namely, RNR can target more than one constituent (Abbott 1976), as shown in Example (33a); it can target non-constituents, as shown in Example (33b) below; and it does not obey locality constraints otherwise observed for wh-movement or extraposition (Levine 1985), as shown in Example (33c).

(33) (a) Smith loaned, and his widow later donated, [a valuable collection of manuscripts] [to the library]. (Abbott 1976, p.639, (1))

(b) These events took place in pre- or in post-[war Germany]? (PennTreeBank, Chaves 2014)
(c) John gave a briefcase, and Harry knows someone who had given a set of steak knives, [to Bill]. (Levine 1985, p.492, (1))

Syntactic mismatches cast doubt on multidominance approaches, pace (Citko 2018). Such approaches are at pains to explain why in case of conflict, it is enough for the shared element to meet the requirements of the final conjunct and to ignore those of the first conjunct. For all these reasons, we do not adopt a movement-based analysis nor a multidominance analysis. This means that we consider Right-Node Raising a misnomer and that Peripheral Ellipsis would be more appropriate. However, we keep the traditional name and acronym here.

5.2. *An analysis for French passives and reflexives*

In what follows, we rely on previous work on French using HPSG (Pollard & Sag 1994, Müller et al. 2021). Following Bresnan (1982), passives are analyzed in HPSG via a valence changing lexical rule (Flickinger 1987, Müller 2001). Assuming a verb has its syntactic arguments in an argument structure list (ARG-ST), the first one corresponding to the subject, the passive lexical rule gives rise to a passive lexeme with a different argument structure, while keeping the semantics (and the thematic roles) the same. In French, the by-phrase can be introduced by *par* or *de*, depending on the verb agentivity (Koenig 1999, Zribi-Hertz & Abeillé 2021), and it is analyzed as a complement (see also DaCunha & Abeillé 2021, Angelopoulos et al. 2021).

(34) Passive lexical rule for French:

$$\begin{bmatrix} \textit{trans-lexeme} & \\ \textsc{arg-st} & \text{<NPi>} \oplus \boxed{2} \end{bmatrix} \Rightarrow \begin{bmatrix} \textit{passive-lexeme} & \\ \textsc{head} & \begin{bmatrix} \textsc{vform} & \text{part} \end{bmatrix} \\ \textsc{arg-st} & \boxed{2} \oplus \text{<PPi[par/de]>} \end{bmatrix}$$

Transitive verbs select the perfect auxiliary AVOIR, via an AUX feature (Abeillé & Godard 2002). Reflexive verbs are derived through another lexical rule that changes the auxiliary selection to *être* and types their complement as a non-canonical anaphoric affix (Abeillé et al. 1998), following the affixal analysis of French pronominal clitics (Miller 1992, Miller & A. Sag. 1997).

(35) (a) Jean lave Paul.
"Jean washed Paul"
(b) Jean se-lave.
"Jean washes himself"

(36) (a) lexical description transitive verb LAVER:

$$\begin{bmatrix} \textit{trans-lexeme} & \\ \text{HEAD} & \begin{bmatrix}\text{AUX} & \text{avoir}\end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}, \boxed{2}\text{NP} \rangle \end{bmatrix}$$

(b) lexical description for reflexive verb LAVER:

$$\begin{bmatrix} \textit{refl-lexeme} & \\ \text{HEAD} & \begin{bmatrix}\text{AUX} & \text{etre}\end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1}\text{NPi}, \boxed{2}\text{NPi[ana]} \rangle \end{bmatrix}$$

In the perfect tense, the reflexive affix is realized on the auxiliary as any other clitic.

(37) (a) Jean l'a lavé.
"Jean has washed him"
(b) Jean s'est lavé.
"Jean has washed himself"

In order to account for clitic climbing (Example (37)), Abeillé & Godard (1994, 2002) analyze French auxiliaries as complex predicates: they analyze the perfect auxiliaries as taking the past participle as a complement, and inheriting its arguments as subject and complements.[11] They also analyze the passive construction as a complex predicate, with the copula taking the passive participle as its complement, since it allows for clitic climbing as well (Example (38)).

(38) La pomme lui sera donnée.
the apple to-her be.FUT given
"the apple will be given to her"

5.3. *An HPSG analysis for RNR*

Following Shiraishi et al. (2019), we assume that RNR does not require phonological identity (Example (11a)) but lexeme identity (unless pun or zeugma). The following example is unfelicitous because it involves two different homophonous lexemes: the baseball bat (elided) and the animal bat (peripheral):

(39) #Robin swung and Leslie tamed an unusual bat (Levine & Hukari 2006)

[11] Bonami & Webelhuth (2013) reconcile this syntactic analysis with morphological periphrasis, using Paradigm Function Morphology: even though the auxiliary and the participle are different words, which are syntactically combined, their combination belongs to the inflectional paradigm of the verbal lexeme. Aguila-Multner & Crysmann (2021) propose an alternate syntactic analysis with a VP complement and no argument composition. Nothing in the present paper depends on the syntactic analysis of the auxiliaries.

To account for Example (11b), they consider that positive and negative polarity sensitive determiner (*any/some*) share the same lexeme, and introduce the Lexical Identifier (LID) feature to capture lexeme identity.

We assume the same LID value for passive and past participles which are derived from the same lexeme (Sadler & Spencer 2001, Bonami & Webelhuth 2013). The feature structure in Example (40) illustrates a simplified lexical entry for the past participle *mobilisé*. The feature structure in Example (41) gives a simplified lexical entry for the past participle with reflexive *mobilisé*. The feature structure in Example (42) shows a simplified lexical entry for the passive participle *mobilisé*.

(40) (non reflexive) active past participle

$$\begin{bmatrix} word & \\ \text{MP} & \begin{bmatrix} \text{PHON} & mobilisé \\ \text{LID} & mobiliser \end{bmatrix} \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{VFORM} & part \\ \text{AUX} & avoir \end{bmatrix} \\ \text{ARG-ST} & \langle NP_i,\ NP_j \rangle \end{bmatrix} \end{bmatrix}$$

(41) reflexive active past participle

$$\begin{bmatrix} word & \\ \text{MP} & \begin{bmatrix} \text{PHON} & mobilisé \\ \text{LID} & mobiliser \end{bmatrix} \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{VFORM} & part \\ \text{AUX} & être \end{bmatrix} \\ \text{ARG-ST} & \langle NP_i,\ NP_i[ana] \rangle \end{bmatrix} \end{bmatrix}$$

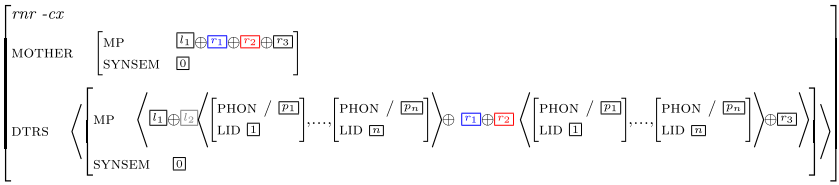
(42) passive participle

$$\begin{bmatrix} word & \\ \text{MP} & \begin{bmatrix} \text{PHON} & mobilisé \\ \text{LID} & mobiliser \end{bmatrix} \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & [\text{VFORM} \quad part] \\ \text{ARG-ST} & \langle NP_j,\ PP_i[par] \rangle \end{bmatrix} \end{bmatrix}$$

Following Chaves (2014), we formalize a RNR rule (43) which targets Morphophonology (MP) and does not add further syntactic constraints. It basically says that in a construction with two sublists with identical lexemes, and usually identical phonology, the first sublist can be deleted, leaving the meaning unchanged. We

leave for future work the addition of a Contrast relation in the semantics (inside SYNSEM), since we conjecture it could be more general and associated with clausal coordination.[12]

(43)



The MP feature of the Daughter phrase is divided into five sublists, which must obey prosodic constraints, which we ignore here. The left-hand sublists, L_1 and L_2 (respectively, in black and in grey in (43)), correspond to any non final conjunct, and the right-hand sublists, R_1 (in blue), R_2 (in red), and R_3 (in black), to the final conjunct. The first sublist L_1 is kept. The deleted sublist L_2 (in grey) must comprise elements with the same LID as R_2 (the shared peripheral element(s), in red), and by default (noted /) the same phonology. Note that the elements in L_2 are not preserved in the MP feature of the mother phrase (resulting in their not being pronounced). Thus, the form of the peripheral elements R_2 (in red) is always that required by the final conjunct. The R_1 (in blue) is the sublist before the shared elements and may comprise a coordinating conjunction. The extra R_3 sublist accounts for Right-Node Wrapping [13] and can be empty.

Figure 9 provides the analysis for RNR with voice mismatch.

6. Conclusions

In this paper, we have investigated voice mismatch in French Right-Node Raising through a corpus study and two acceptability judgement experiments, and provided an HPSG formalization. RNR is often thought to be special because it is backwards and less syntactically constrained than other kinds of ellipsis (Chaves 2014). We show that RNR allows for voice mismatch like VP ellipsis and pseudogapping. We found that RNR with voice mismatch is attested in written French. In our corpus study, most RNR with voice mismatch involve coordination of reflexive active and

[12] As noted by Chaves (2014), RNR is not limited to coordination, as shown by the attested example: she learns how to relax them to accept instead of contracting them to repel [the entering object]. (Brown Corpus, Bîlbîie 2013). This is why the rule in Example (43) is not limited to coordination.

[13] See Whitman (2009), who provides numerous attested examples, among which (i), in which the "wrapped" segment "away" corresponds to R_3:(i) I've got friends in low places, where the whiskey drowns ~~my blues~~ and the beer chases my blues away. ("Friends in Low Places", Earl Bud Lee and DeWayne Blackwell (Whitman 2009: 235, Shiraishi et al. 2019 fn16).

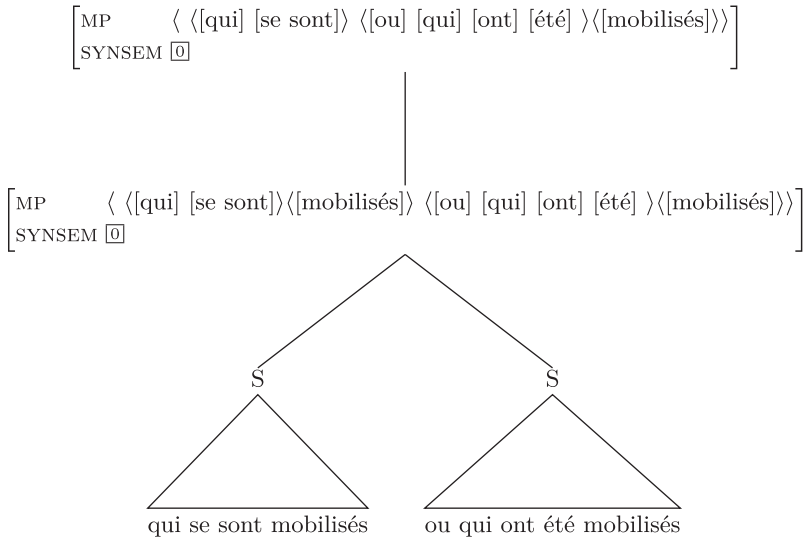


Figure 9
Analysis of French RNR with voice mismatch

passive forms. This shows the importance of semantic contrast (here, between self and non self agent) in RNR, and also of topic continuity as in VP ellipsis (Kertz 2013). The first acceptability judgement experiment revealed that RNR with voice mismatch is as acceptable as without mismatch, and that (agent) contrast may play a role, in particular, for voice mismatch. The importance of semantic contrast is confirmed by the second experiment, without VP RNR.

This may be difficult to account for by a raising or multidominance analysis of RNR. We show that it is compatible with a lexeme deletion-based approach. Following Chaves (2014) and Shiraishi et al. (2019), we present an HPSG deletion-based analysis of RNR based on lexeme identity.

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Authors' addresses: *(Abeillé)*
Université Paris Cité, CNRS,
anne.abeille@u-paris.fr

(Shiraishi)
University of Tokyo, Japan,
ioaaoi430@gmail.com

(Hemforth)
Université Paris Cité, CNRS,
barbara-edith.hemforth@cnrs.fr