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# PROCESSING POSSESSIVES IN FRENCH AS A FOREIGN LANGUAGE: DESIGN OF AN EXPERIMENT

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ABSTRACT

The paradigm of possessive determiners differs in systematic ways across languages and causes cognitive resolution problems in the interpretation of a foreign language. Based on previous investigations into cross-linguistic influences (CLI) in learners' interpretation of possessive determiners, this article presents the design of an experiment for testing English, German and Norwegian adult learners of French. We specify two kinds of processing problems: a direction problem (orientation towards possessor vs. possessee) and a problem of lexical parasites ('false friends'). The experiment is directed at learners' spontaneous interpretation of the singular possessives *son, sa* and *ses*, on account of a partly false friendship with the possessive determiners in these learners' first languages.

## [1] INTRODUCTION[1]

The present paper specifies the particularly difficult task of acquiring the meaning of French possessives for English, Norwegian and German learners of French as a foreign language, and presents an experimental design intended to test learners on their spontaneous interpretation of the 3rd person singular possessive determiner in its three forms s*on, sa* and *ses*.[2] The four languages of discussion all have possessive determiners/pronouns, but the systems differ in important respects: on the one hand some of the languages have partly false friends in their systems, like German *sein* and French *son*; on the other, the learners' L1s all use lexically (more or less) different singular possessives, depending on properties of the antecedent: English *his* and *her*, German *sein* and *ihr*, Norwegian *hans*, *hennes* and *sin/sitt/sine* (see Sect. 2). That is, the learners have to interpret the French possessives according to syntactic criteria that differ from the criteria of their mother tongue parallels.

[1] The paper is built on a version in Norwegian that we developed for a celebration of a colleague's 60

[2] Normally, Norwegian and German learners of French have English as their first foreign language, while for English learners French is probably their first (and only) foreign language; that is, in our context French is Ln with n ≥ 2.

We are interested in establishing to what extent and in what ways lexical similarities and syntactic differences between learners' L1 and their target language (Ln) French affect their spontaneous interpretation of the target language.

> L1 influence is clearer in L2 word processing than in syntactic processing. Of course, this does not negate a potential role of L1 influence in syntactic processing: It is possible that reliable evidence will emerge once methodologically reliable comparisons are conducted. What is interesting, however, is that this variability is not observed in L2 word processing. For words, learners seem to show reliable evidence of coactivation at the form and meaning level, despite differences in L2 dominance. This suggests that CLI [Cross-Linguistic Influence] may differentially affect lexical and syntactic processing.
>
> (Lago et al 2020: 9)

The interpretation of 3rd person pronouns in Ln is generally treated as a syntactic problem in the literature; see e.g. Fabricius-Hansen et al. (in this volume) for a recent overview and further references. The question is whether the Ln learner can handle/ has acquired the syntactic restrictions of the pronouns in the relevant language and to what extent their processing is influenced by the system in their native tongue. To our knowledge, L1 priming – lexical transfer – of possessive determiners is scarcely treated cross-linguistically in the relevant literature. The topic is relevant for unequal pronoun systems in a wide sense across closely related languages. Our contribution here is therefore to specify linguistic and cognitive factors that may affect (mis)interpretations of French 3rd person possessives. We establish a set of hypotheses regarding the syntactic conditions for the understanding/interpretation of the possessives in the individual languages and develop a test design for further study.

## [2] THE UNEQUAL SYSTEMS OF POSSESSIVES

French *s*-possessives, *son, sa* and *ses*, symbolized as *s** in the following, require a *possessor*, i.e. an antecedent *in the singular*, but are neutral with respect to its gender. This means that *son, sa* as well as *ses* in (1) and (2) must point to *Marie* or *Paul*, while reference to plural *les parents/enfants* 'the friends/children' is excluded. The choice between the various forms is exclusively determined by the grammatical gender of the *possessee*, i.e. the lexical head of the nominal introduced by the possessive. Thus, *son* is the possessive determiner in a nominal

phrase with a grammatically masculine singular noun, such as *dessert, sa* requires a feminine singular noun (e.g. *crêpe*), and finally, *ses* determines a plural noun (e.g. *sandwiches*). To refer to plural antecedents, e.g. *les parents* in (1) and *les enfants* in (2), a lexically different possessive is used: *leur/leurs*.

We note that the pattern of the singular possessives *son/sa/ses* follows the pattern of the definite determiners in French, *le/la/les*, although only partly since the masculine forms differ.

(1) Pendant que les parents commandent du vin, *Marie* / *Paul* mange ***s***on dessert$_{m.sg.}$ ***s***a crêpe$_{f.sg.}$ ***s***es sandwiches$_{pl}$

('While the parents order wine, Marie eats her / Paul eats his dessert/ crêpe/ sandwiches')

(2) Pendant que *Marie* / *Paul* commande du vin, les enfants mangent ***s***on dessert$_{m.sg.}$ ***s***a crêpe$_{f.sg.}$ ***s***es sandwiches$_{pl}$

(While Marie/ Paul orders wine, the children eat her [Marie's]/ his [Paul's] dessert/ crêpe/ sandwiches')

In contrast to the French *s** possessive, which does not distinguish between the gender of its singular possessor**,** but marks the gender of the possessee**,** the *English* possessives *his/her/their* mark the (natural) gender/number of the possessor, but not any gender or number of the possessee. Thus, for a correct interpretation of (2) above, an English native speaker learning French must understand that *son/sa/ses* all point to *Paul*/*Marie* and that *ses* cannot point to the plural subject *les enfants*. Due to the lack of gender in English there is also no agreement marking between the possessive and the possessee. For an English native speaker learning French, then, the cognitive mechanism must learn to orient towards the possessee as well as the possessor for the learner to interpret the French possessive determiner correctly.

The *Norwegian* system distinguishes lexically between an *s*-possessive, which points reflexively to the subject of the clause in which it appears, and possessives pointing back to a (non-local) nominal in a previous clause/the preceding clause. Moreover, the reflexive possessive agrees with the grammatical gen-

der/number of its possessee, resembling French in this respect, whereas the non-local ones, resembling the English possessives, are not inflected.[3]

(3) *Non-local reference*

a. Mens *Marie*$_{f}$ bestiller vin, spiser barna desserten$_{m}$ / smørbrødet$_{n}$ / kakene$_{pl}$ *hennes*$_{f}$

('While Marie orders wine, the children eat her dessert/ sandwich/ cakes')

b. Mens *Paul*$_{m}$ bestiller vin, spiser barna desserten$_{m}$ / smørbrødet$_{n}$ / kakene$_{pl}$ *hans*$_{m}$

('While Peter orders wine, the children eat his dessert/ sandwich/ cakes')

c. Mens *foreldrene*$_{pl}$ bestiller vin, spiser barna desserten$_{m}$ / smørbrødet$_{n}$ / kakene$_{pl}$ *deres*$_{pl}$

('While the parents orders wine, the children eat their dessert/ sandwich/ cakes')

For a correct Norwegian equivalent of (1), on the other hand, where the possessive can only point back to the subject of the clause in which it appears, the reflexive (local) possessive is required. The Norwegian *s*-possessive points to the local subject irrespective of its gender and number, but it is inflected in accordance with the gender and number of the possessee.

(4) *Local reference*

Mens foreldrene bestiller vin, spiser *Marie/ Paul/ barna* desserten$_{m}$ / smørbrødet$_{n}$ / kakene$_{pl}$ ***si****n*$_{m}$ / ***si****tt*$_{n}$ / ***si-ne***$_{pl}$

('While the parents order wine, Marie eats her / Paul eats his/ the children eat their [own] dessert/ sandwiches/ cakes')

Note that in English, the plural *their* in the English translations of (3c) and (4) refers ambiguously to the parents/the children. In Norwegian, different lexical items are chosen for the possessive depending on the local or non-local subject antecedent.

[3] Note that the adnominal Norwegian possessive mostly follows rather than precedes its head noun (see e.g. Faarlund 2019).

The reflexive *si** possessive in Norwegian has an obvious morpho-phonological resemblance to the French singular *s** possessive. For a native Norwegian learner of French, then, chances are that the French *s*-possessive is mistaken for a local interpretation only. Since the Norwegian *s*-possessive is also used for reference to a (local) subject/possessor in the plural, it seems reasonable to think that French *ses*, for example, which refers back to an antecedent in the singular only and does not distinguish between a local and a non-local antecedent, is mistaken for a local, plural-referring anaphor by Norwegian learners of French. We shall formulate our hypotheses in more detail in Section 4.

The *German* system falls between the other possessive systems we present here. Like English, but unlike French, it distinguishes lexically between a masculine and a feminine possessor: *sein**$_{\text{m.sg}}$ vs. *ihr**$_{\text{f.sg}}$.[4] Moreover, like French but unlike English, the German possessives are inflected, marking the number, grammatical gender (and case) of the possessee. Like English and French, but unlike Norwegian, they are neutral with respect to the locality of the antecedent. This means that the possessive in (5) can refer to the masculine subject in the local clause or in the initial subordinate clause. Unlike the French possessive in (6) and (7), the German *sein* cannot refer to feminine antecedents like *Linda* or *Marie* in (5).

(5) Während *Paul* (~~Linda~~) Cognac bestellt, isst *Peter* (~~Marie~~) *sein* Dessert.
'While Paul orders brandy, Peter eats his dessert.'
(6) Pendant que *Marie* commande du cognac, *Paul* mange *son* dessert.
'While Marie orders brandy, Paul eats his/ her dessert.'
(7) Pendant que *Paul* commande du cognac, *Marie* mange *son* dessert.
'While Paul orders brandy, Marie eats her/ his dessert.'

Since the German *sein** is morpho-phonologically very similar to French *son*, one may expect the native German learner of French to misinterpret this French possessive determiner to find its reference in a masculine, singular antecedent only.

Another problem, unique to German, is that *ihr**, the form for a feminine, singular possessor (English *her*), is also the form for possessor plural (English *their*). Thus, for an interpretation of (8), the native German learner of French may have a problem with the reference of the possessive: does it relate back to *Marie* or to *les parents*?

[4] Simplifying, we treat German as a two- rather than three-gender language (masc., neut., fem.).

(8) Pendant que les parents commandent du cognac, *Marie* mange *ses* crêpes.
'While the parents order brandy, Marie eats her crêpes.'

We sum up the differences between the singular possessives in the four languages in Table 1 below.

In the following section we take a closer look at potential (mis)interpretations of Ln-FR possessives as a consequence of the various L1-conditioned processing strategies presented above (see also Fabricius-Hansen et al. 2917: 30–32; Helland 2017; 2019). We concentrate on syntactic conditions as exemplified in (1)–( 2) and (6)–( 7) above, and more systematically in Table 3 (Sect. 5).

| | | Possessor-related features | | |
|---|---|---|---|---|
| | **Possessive** | **Number** | **Gender** | **Reflexivity** |
| FR | *son/sa/ses* | sing. | - | - |
| EN | *his/her* | sing. | masc./fem. | - |
| GE | *sein*/ihr** | sing. | masc./fem. | - |
| NO | *hans/hennes* | sing. | masc./fem. | irreflexive |
| | *sin/sitt/sine* | - | - | reflexive |

TABELL 1: Possessives pointing to singular antecedents in French, English, German and Norwegian

## [3] COGNITIVE CHALLENGES FOR LN LEARNERS

### [3.1] *The direction problem*

First, the learner must understand the orientation of the French s* forms *son/sa/ses*, i.e. that their grammatical forms point forward to the possessee in French and are not associated with the gender of their antecedent. This is considered cognitively a directional problem for all the different learners we discuss here, although possibly a greater problem for the English learners, since English has no grammatical gender marking on nouns and consequently no agreement between the determiner and the noun. But it also seems to be a problem for Norwegian and German learners of the French system since both languages distinguish lexically between reference to a feminine or a masculine possessor; cf. Helland (2017; 2019) for Norwegian/French and Dalmas & Vinck-

el-Roisin (2012), Fabricius-Hansen (2019) for German/French; cf. also Lago et al. (2018).[5]

Ln-internally, the *son/sa/ses* forms a regular pattern with 1st and 2nd person sg. possessives (*mon/ma/mes* and *ton/ta/tes*); cf. Dalmas & Vinckel-Roisin (2012). This gives reason to think that native speakers conceive of *son* as consisting of a 'stem', *s*,* carrying the semantics of 3rd person possession, and an ending *-on* agreeing with a masc. sg. possessee. The endings on the possessives *sa* and *ses* correspond to the definite article endings (*la* and *les*), as mentioned above, whereas the masculine singular *-on* is specific for the possessive determiners. An immediate association from *sa/ses* to *la/les* as expressions for fem.sg. and plural respectively is therefore not unlikely for Ln-FR learners. However, could it be that the possessor-oriented gender/number differentiation so characteristic for EN *his/her/their,* GE *sein*/ ihr** and the Norwegian irreflexive possessives *hans/hennes/deres* (see Table 1) are erroneously transferred to *son/ sa/ ses*?

We believe that the learners we discuss here spontaneously mis-direct the gender (and number) marking on the French s* possessive to an antecedent possessor during learning, and only analytically, which takes longer, interpret it correctly.

### [3.2] *The problem of lexical parasites*

We follow Pavlenko (2009) and Lago et al. (2021) in assuming a strong connection between L1 and similar Ln words during the early and middle stages of acquisition. At early stages of acquisition, according to Pavlenko (2009: 142), 'L2 words are more strongly connected to their L1 translation equivalents than to concepts [...] As proficiency increases, the links between L2 words and concepts become stronger'. Lago et al. formulate this phenomenon as a parasitic storage system:

> Ln words are initially stored 'parasitically', such that their entries are associated with similar, already known words in learners' L1, L2 or Ln lexicon. These known words function as 'hosts', and learners access the similarity between a host and a parasite subconsciously and on multiple levels, although initially they rely more on orthographic and phonological similarity (form level!) and only later – as their proficiency increases – on grammatical and conceptual similarity (frame and concept levels, respectively). Dur-

[5] Note, however, that since *sein** and *ihr** are inflected in agreement with the possessee, L1 German learners of Ln French will be familiar with 'looking in both directions' from their L1 (cf. Stone et al. 2020).

> ing initial learning stages, the PM [Parasitic Model] predicts pervasive CLI in processing, as hearing or reading a Ln word should activate its host(s) in other languages. When a new word is successfully learned, its form, frame, and conceptual connections are severed, such that the parasite detaches from the host and its lexical access proceeds autonomously.
>
> (Lago et al. 2021: 172)

For the English learner then, *his* and *her* would/could host French s*on* and *sa* respectively, and the syntactic conditions of the (English) host would attach to the understanding of the French possessives, leading to the misdirected interpretation mentioned in 3.1; and likewise for *their* vs. *ses*.

For the Norwegian and German learners there are other parasitic relations: the French s* possessives have (partly) false friends in these languages: phonologicially/orthographically resembling words within the same semantic field of 'possession'.

But in this context, what is actually meant by a 'word'? Is it a lexeme – a stem or a root – in a more or less abstract, linguistic sense, or is it a specific form which can be, but does not have to be phonologically/orthographically identical with the stem or root, corresponding to a dictionary item in the traditional sense (see for example a relevant discussion in Lyons 1977: ch. 13, Bybee 1985 and Matthews 1991)? How exactly are so-called lexemes stored in a speaker's 'mental lexicon'?[6]

The question here is whether FR *son*, *sa* and *ses* are conceived of as independent lexical items by the Ln learner or simply as inflected forms of a lexical item 'possessive' (our *s**). How is such a lexeme represented in the learner's mental lexicon? A parallel question may be raised with respect to Norwegian native speakers and their mental representation of *sin*, *sitt* and *sine*. Probably, the traditional dictionary item *sin*, rather than the stem *si**, is also the speaker's mental representation, the item that 'stands for' the lexeme. German seems less problematic in this respect: we can assume that the word form *sein* (masc.sg.) for native German speakers also represents a stem/a lexeme (our *sein**).[7]

However problematic this question is, it seems reasonable to assume that German and Norwegian learners of Ln French in one way or another associate *son*, *sa*, and *ses* with their partly false friends in their mother tongue, and par-

[6] See Audring & Masini (2018) for a more general discussion. See also López (2020) for considerations in the frame of Distributed Morpholgy.

[7] The German form *sein* (possessee-orientented nominative, masc. sg.) is identical with the stem (*sein**), while *son* and *sin* is built on a stem (*s** resp. *si**) combined with a possessee related marker of masc.sg.

ticularly for *son/sein(*)* and *son/sin*, in which the final consonants also correspond. Lexical transfer from L1, then, during the interpretation of a Ln-FR *s*-possessive in a given syntactic environment, means that the Ln possessive – the parasite – gets the same interpretation that the mother tongue *s*-possessive (the host) would get under the same syntactic conditions.

As a consequence, L1-NO learners of French, as opposed to French native speakers, may understand *son* – perhaps also *sa* and *ses* – reflexively in example (2). As GE *sein(*)* is marked possessor-oriented masculine singular, it is also reasonable to think that a German learner of French will associate *son* in (6) with *Paul* and neglect the possibility that the local subject *Marie* is a potential referent.

## [4] HYPOTHESES ON OUR LEARNERS' INTERPRETATION OF THE FRENCH POSSESSIVES

With the above description of the possessive systems in the four languages, we can now make predictions with respect to the three L1 groups' interpretation of possessive determiners in their learner language French. The learners we have in mind have reached the proficiency level B1 or B2 according to CEFR standards.

To formulate the predictions, we need a set of complex sentences like (2) above, spelled out as independent examples (9) to (12) below:

(9) Pendant que *Marie* commande du vin, *Paul* mange *son* dessert.
'While Marie orders wine, Paul eats his/her dessert.'
(10) Pendant que *Marie* commande du vin, *Paul* mange *sa* crêpe.
'While Marie orders wine, Paul eats his/her crêpe.'
(11) Pendant que *Paul* commande du vin, *Marie* mange *son* dessert.
'While Paul orders wine, Marie eats her/his dessert.'
(12) Pendant que *Paul* commande du vin, *Marie* mange *sa* crêpe.
'While Paul orders wine, Marie eats her/his crêpe.'

Since the French possessive does not distinguish between the gender of the antecedent, each example is ambiguous between two readings: the possessive may refer to either Marie or Paul. Other research on pronoun resolution indicates that native speakers tend to resolve the pronoun locally, i.e. they choose the closest available (subject) referent if nothing speaks against it (see e.g. Fox 1998; Patterson et al. 2014; Pitz et al. 2017: 65–66). For our examples, then, we would expect native speakers to preferably interpret *son* and *sa* in (9) and (10) as referring to *Paul*, and in (11) and (12) to *Marie*.

On the parasitic model of foreign language learning, combined with the fact that all the learners' L1-languages have separate lexical items for masculine and feminine singular possessor-oriented possessives, we can formulate the following preliminary hypotheses on the learners' interpretations of the four sentences above:

(i) *Hypothesis 1*: All groups will interpret *son* to refer to a masculine antecedent more often than to a feminine antecedent in this construction.

(ii) *Hypothesis 2*: All groups will interpret *sa* to refer to a feminine antecedent more often than to a masculine antecedent in this construction.

This means that we expect native-like responses to (9) and (12), irrespective of what strategy has been used to arrive at these responses (so called positive transfer), but we expect non-native like responses to (10) and (11) for the very reason that the relevant groups will tend to confuse possessee agreement in French with the possessor gender orientation in their native languages (negative transfer).

We also expect (partly overlapping) differences in the responses from the three learner groups. based on the partly false friends in German and Norwegian.

(iii) *Hypothesis 3*: English and German learners will demonstrate much the same pattern of errors due to their morphological distinctions between masculine and feminine singular possessor-oriented possessives. They will tend to correlate FR *son* with *his/sein**, FR *sa* with *her/ihr** and FR *ses* with *their/ihr**.

(iv) *Hypothesis 4*: German learners will tend to score better than English learners when there is a masculine singular antecedent in the test sentence, due to the phonological resemblance between FR *son, ses* and GE *sein**.

(v) *Hypothesis 5*: Norwegian learners will have more local interpretations irrespective of possessor gender than the other two groups due to the morpho-phonological resemblance between the French *son/sa/ses* and the Norwegian reflexive *sin/sitt/sine.*

Provided our hypotheses on the learners' possessor-orientation are correct, we also expect erroneous interpretations of plural *ses*. Consider the following example:

(13) Pendant que les parents commandent du vin, *le garçon* mange *ses* olives.
'While the parents order wine, the boy eats his olives.'

Due to the reflexive possessive system in Norwegian, Norwegian learners will associate *ses* with the highly similar (possessee-)plural reflexive *sine* and end up with positive transfer in the interpretation of (13) above. German and English learners will more often than Norwegian learners interpret *ses* as pointing to the plural subject of the subordinate clause, i.e. as possessor-related plural.

The same error distribution is not expected to result when the plural subject appears in the main clause as in (14), since all groups, although for different reasons, are expected to misinterpret the possessive and erroneously relate *ses* to *les parents*.

(14) Pendant que *le garçon/ la fille* achète une glace, les parents mangent *ses* sandwiches.
'While the boy/ the girl buys an ice cream, the parents eat his/her sandwiches.'

Finally, it must be added that the language internal similarity of *la/sa* and *les/ses* may affect the learners' responses:

(vi) *Hypothesis 6*: The learners will be more uncertain with respect the resolution of *sa* and *ses* than of *son*, due to the close Ln internal resemblance between *la/les* and *sa/ses*. The resemblance will affect the learners' attention to *s*: s** will be disregarded and responses will be mainly pragmatic. We thus expect candidates to take longer to answer questions on possible possessors under examples of *ses* in particular.

## [5] HOW TO TEST OUR HYPOTHESES: THE DESIGN OF AN EXPERIMENT

To test the hypotheses we have arrived at above, we suggest a *reading experiment* in which the *experimental items/ target items*, like our examples in the preceding sections, are versions of an initial subordinate temporal clause followed by a main clause in which the possessive occurs in a syntactic object. The examples A–D in (15) represent (four) different *item classes* in the sense that they vary with respect to the initial subjunction and the activities described in the two subclauses (in italics).

(15)

A *Quand* les parents *commandent du vin*, Paul *mange* sa crêpe.
'When the parents order wine, Paul eats his crêpe.'

B *Tandis que* la fille *achète une glace*, les garçons *cachent* son iPad.
'While the the girl buys an icecream, the boys hide her iPad.'
C *Pendant que* le père *fait les courses*, les garçons *nettoient* son bureau.
'While the father is shopping, the boys clean his apartment.'
D *Alors que* Pierre *travaillait dans le jardin*, Marie *gardait* ses chats.
While Pierre worked in the garden, Marie took care of his/her cats.'

For each item class, we have three conditions in systematic variation: number/gender of the (non-local) subclause subject, number/gender of the (local) main clause subject, and number/gender of the *s**-possessive, i.e. *son* vs. *sa* vs. *ses* (note that the possessee noun will vary in number/gender in accordance with the possessive); cf. Table 2.

| **Subclause subject (non-local)** | **Main clause subject (local)** | **Possessive** |
|---|---|---|
| PL(ural) | PL(ural) | son |
| M (asc. sg.) | M(asc. sg.) | sa |
| F(em. sg.) | F(em. sg.) | ses |

TABLE 2: SETS OF CONDITIONS

Altogether, this gives 3x3x3 = 27 different (combinations of) conditions. However, combinations with two masculine, two feminine or two plural subjects, or with *ses* and two singular subjects are dispensable for our purposes. Leaving them out, we end up with the 16 conditions exemplified in Table 3 (for item class C).

| **Condition** | | **Test item** |
|---|---|---|
| c1 | M+PL+son | Pendant que *le père* fait les courses, ~~les garçons~~ nettoient *son* bureau. |
| c2 | M+PL+sa | Pendant que *le père* fait les courses, ~~les garçons~~ nettoient *sa* chambre. |
| c3 | M+PL+ses | Pendant que *le père* fait les courses, ~~les garçons~~ nettoient *ses* chambres. |
| c4 | F+PL+son | Pendant que *la mère* fait les courses, ~~les garçons~~ nettoient *son* bureau. |
| c5 | F+PL+sa | Pendant que *la mère* fait les courses, ~~les garçons~~ nettoient *sa* chambre. |
| c6 | F+PL+ses | Pendant que *la mère* fait les courses, ~~les garçons~~ nettoient *ses* chambres. |
| c7 | PL+M+son | Pendant que ~~les garçons~~ font les courses, *le père* nettoie *son* bureau. |
| c8 | PL+M+sa | Pendant que ~~les garçons~~ font les courses, *le père* nettoie *sa* chambre. |
| c9 | PL+M+ses | Pendant que ~~les garçons~~ font les courses, *le père* nettoie *ses* chambres. |

| | | |
|---|---|---|
| c10 | PL+F+son | Pendant que ~~les garçons~~ font les courses, *la mère* nettoie *son* bureau. |
| c11 | PL+F+sa | Pendant que ~~les garçons~~ font les courses, *la mère* nettoie *sa* chambre. |
| c12 | PL+F+ses | Pendant que ~~les garçons~~ font les courses, *la mère* nettoie *ses* chambres. |
| c13 | M+F+son | Pendant que *Paul* fait les courses, *Marie* nettoie *son* bureau. |
| c14 | M+F+sa | Pendant que *Paul* fait les courses, *Marie* nettoie *sa* chambre. |
| c15 | F+M+son | Pendant que *Marie* fait les courses, *Paul* nettoie *son* bureau. |
| c16 | F+M+sa | Pendant que *Marie* fait les courses, *Paul* nettoie *sa* chambre. |

TABLE 3: Conditions and corresponding test sentences (item class C). Possessives and acceptable antecedents in italics, unacceptable antecedents barred[8]

We envisage a Latin square design experiment in which item classes are varied with respect to conditions as shown in Table 3, and in which all the conditions are tested once in each group of informants but on different item classes. This means that each L1 group is split into four sub-groups whose test materials differ systematically with respect to the pairing of condition and item class; cf. Table 4.

| | **Sub-groups** | | | |
|---|---|---|---|---|
| **Condition** | **I** | **II** | **III** | **IV** |
| c1 | A | B | C | D |
| c2 | B | C | D | A |
| c3 | C | D | A | B |
| c4 | D | A | B | C |
| c5 | A | B | C | D |
| c6 | B | C | D | A |
| … | … | … | … | … |
| c16 | D | A | B | C |

TABLE 4: Distribution of test items within group of informants

When the test persons have been presented with a sentence and given time to read it, they have to respond to a question with three alternative answers (*forced choice task*). The questions and answers are formulated in the target language (French). The informants' answers will show whether they have inter-

[8] *le père* 'the father', *la mère* 'the mother', *les garçons* 'the sons', *chambre* (f) 'room', *chambres* (pl) 'rooms'', *fait/font les courses* 'is/are shopping', *nettoie/nettoient* 'clean(s)'.

preted the possessive correctly. The sentence they read is no longer available once they push a button to get to the question they are asked to answer. For example, the appearance of (16) – c4 in Table 3 – is followed by (16'), with the alternative answers in (16'').

(16) Pendant que la mère fait les courses, les garçons nettoient son bureau.
('While the mother is shopping, the sons clean her apartment.')
(16') *A qui appartient l'appartment?*
('Whose apartment is it'?)
(16'') *la mère* *les garçons* *quelqu'un d'autre* ('somebody else')

Under conditions c1 through c12, where either the local or the non-local subject is a plural noun phrase, *native French* test persons are presumed to interpret all three possessives as referring to the singular nominal subject, irrespective of its gender and irrespective of its position in the main or subordinate clause: *le père* in c1–c3 and c7–c9, *la mère* in c4–c6 and c10–c12 (Tab. 3); the plural nominal *les garçons* is grammatically precluded as an antecedent. Under c13 through c16, on the other hand, both clause subjects are singular and consequently licensed as antecedents; that is, the possessive is referentially ambiguous. In such cases native French informants will probably prefer the local 'candidate', i.e. *Marie* in c13–c14 and *Paul* in c15–c16, if nothing in the context speaks against it (cf. Sect. 4).

We sum up our expectations for the three categories of learners:

As mentioned in Section 4, we assume that *English L1* informants will tend to interpret *son*, *sa* and *ses* as *his*, *her* and *their* respectively. That is, they will correctly relate *son* to *le père* in c1 (non-local) and c7 (local) and *sa* to *la mère* in c5 (non-local) and c11 (local) – like native French informants. And indepedently of binding conditions, they will prefer the masculine candidate (*Paul*) for *son* and the feminine candidate (*Marie*) for *sa* under the ambiguous conditions c13–c16. Under conditions that do not offer a masculine antecedent for *son* (c4, c10) or a feminine candidate for *sa* (c2, c8), however, we expect the English L1 informants to be more uncertain, opting more often for the (incorrect) *quelq'un d'autre* 'somebody else'. As for *ses*, we predict a certain amount of erroneous resolutions to the plural antecendent candidate (*les garçons*) under the relevant conditions (c3, c6, c9, c12), in particular when the plural candidate is the local subject (c3, c6).

By and large, we expect informants with *German L1* to follow the same interpretation pattern as the English-speaking learners, preferably relating *son* to a masculine, *sa* to a feminine and quite often (erroneously) choosing a plural an-

tecedent for *ses*. On the other hand, phonological/orthographic similarity may lead them to associate *ses* with *sein*,* i.e. a masculine possessor. Consequently, they might score better than the English informants under the conditions c3 and c9.

*Norwegian L1* informants are expected to prefer a reflexive reading of *son*, not least when the local subject is masculine (c7, c15) but to some extent also when it is feminine (c10, c13) or plural (c1, c4); in the latter case the interpretation is wrong. As for feminine *sa***,** the Norwegian informants will probably prefer a feminine referent (*la mère, Marie*), whether local (c11, c14) or non-local (c5, c16); but if none is present (c2, c8), they will tend towards a reflexive interpretation even when it is grammatically precluded (c2), or possibly reject both 'candidates'. For *ses* we expect a similar distribution of (incorrect) plural interpretations – in particular when the local subject is plural (c3, c6) –, correct reflexive singular interpretations (c9: *le père*, c12: *la mère*) and rejection of both possessor candidates.

The experiment needs *fillers/distractors*. Fillers may be built on the same patterns as the target items, but for the sake of variation the order of the subordinate/main clauses may differ. The number of distractors should be at least as many as the target items. We suggest some examples in (17)-(19) below. – In the final set, the target items and the fillers must be randomized, and the order of the alternative answers to choose from must vary.

(17) Parce que Paul a oublié l'anniversaire de Marie, il lui envoie un gros bouquet de fleurs.
('Since Paul forgot Marie's birthday, he sends (her) a large bouquet of flowers.')
*Qui reçoit des fleurs?* ('Who receives flowers?')
*Paul* *Marie* *quelqu'un d'autre*

(18) Le professeur envoie une bouteille de vin à la collègue qui vient de s'installer dans le bureau à côté.
('The professor sends a bottle of wine to the colleague who just moved into the adjacent office.')
*Qui a déménagé?* ('Who moved?')
*le professeur* *la collègue* *tous les deux* ('both')

(19) Anna accompagne Pierre à la boutique et elle lui conseille d'acheter le manteau le plus cher.

('Anna joins Pierre to the store and advises him to buy the most expensive coat.')
*Qui achète le manteau le plus cher?*
('Who buys the most expensive coat?)
*Pierre* *Anna* *tous les deux* ('both')

## [6] A COMMENT ON THE PRESENT DESIGN

The structure of our experimental items leans on Pitz et al. (2017: Sect. 4), who investigate L1-German learners' interpretation of the Ln-Norwegian possessives *sin* (reflexive) and *hans* (irreflexive masc. sg.), which both correspond to German *sein** (cf. Sect. 2 above). However, our target sentences differ from theirs by having the possessive occur in the sentence-final main clause, i.e. after both possessor candidates: the possessive points 'backward', whether reflexively or anaphorically. By contrast, if the possessive occurs in the initial subordinate clause as in Pitz et al. (2017: 61-62), the choice stands between a (backward-pointing) reflexive and a forward-pointing (cataphoric) interpretation;[9] cf. the Norwegian sentences in (20) and their referentially ambiguous German counterpart in (21) (from Pitz et al. 2017: 61–62; italics added).

(20)

a. Mens *Emil*$_{\text{LOCAL}}$ passer på [den lille hunden *sin*], klatrer Magnus$_{\text{NON-LOCAL}}$ i den gamle eika.
('While Emil takes care of [the little dog sin], Magnus climbs on the old oak tree. ')
b. Mens Emil$_{\text{LOCAL}}$ passer på [den lille hunden *hans*], klatrer *Magnus*$_{\text{NON-LOCAL}}$ i den gamle eika.
('While Emil takes care of [the little dog his], Magnus climbs on the old oak tree. ')

(21) Während *Emil*$_{\text{LOCAL}}$ auf *seinen* kleinen Hund aufpasst, klettert *Magnus*$_{\text{NON-LOCAL}}$ in der alten Eiche herum.
('While Emil is taking care of his little dog, Magnus is climbing in the old oak tree.')

Pitz et al. (2017) counterbalance the cataphoricity effect by introducing the competing referents, i.e. Emil and Magnus in (20)–(21), in a short pretext to the target sentence. This device ensures that the competitors are equally salient /

[9] For cataphoric pronoun interpretation, see e.g. Pablos et al. (2015), Drummer & Felser (2018).

both pre-mentioned when the interpreter starts processing the target sentence; in our case, however, it does not seem strictly necessary since the potential referents have been introduced sentence-internally before the possessive is encountered.

## [7] CONCLUDING REMARKS

The present paper spells out the interpretation problems English, German and Norwegian learners of French are expected to have when they read. We have formulated specific hypotheses relating to differences that can be expected according to the learner's L1. We have furthermore designed an experiment that can be used irrespective of the informants' first language and give evidence for or against the hypothesized parasitic effects of the individual L1s. More advanced learners may well distinguish correctly, so our test applies mainly to the intermediate level. However, we believe that even relatively advanced learners will spend more time than the native French speakers to assign correct reference. With an extension of core examples according to our pattern, the test should be ready for execution with instructions for the test candidates to read each sentence according to his/her own pace, press a button to get to the question, and press the one out of three buttons (marked on the keyboard) that corresponds to their understanding of the sentence. As for fillers, we believe that a rich variety will prevent the test person to guess what the test is out to investigate, and thus guarantee more spontaneous responses. Our hope is that their answers give clear evidence of our hypothesized L1 transfer

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