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Indeterminacy in L1 French grammars: the case of gender and number agreement

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Abstract

Although L1 French speakers (FS) acquire the formal features of gender and number early, agreement appears to take longer, leading to persistent difficulties even for cases of straightforward agreement within a nominal or verbal phrase. This begs the questions of how adult FSs ($n = 168$) may fare with idiosyncratic cases of agreement such as nominal affective constructions and past participles as measured by a written grammaticality judgment /correction task and preference/grammaticality judgment task. The findings showing that participants performed better at correctly accepting than rejecting stimuli, are consistent with an increasing number of empirical studies revealing individual differences among adult L1 speakers. The findings are discussed from a generative perspective and the usage-based perspective of the Basic Language Cognition-High Language Cognition theory of L1 proficiency (Hulstijn, 2015).

Keywords: gender; agreement; L1 French speakers; indeterminacy; nominal affective constructions; past participles; causative *faire*

1. INTRODUCTION

The French language established itself during the sixteenth century with the help of writers (e.g. Joachim du Bellay, *Deffense et Illustration de la langue francoyse*, 1549) and royal edicts (e.g. *Edit de Villers-Cotterêts*, 1539). As it became a political instrument in the seventeenth and eighteenth centuries, French underwent a process of codification and standardization with prescriptive grammars and dictionaries as well as the creation of the *Académie française* in 1635. Standard French has maintained its prestige, and “proper usage” is highly valued by its speakers (Lodge, 1993; Battye, Hintze and Rowlett, 2000). However, even a strongly codified language such as French cannot escape some indeterminacy or idiosyncrasies as with agreement phenomena.

Agreement (or concord) in written French concerns the formal features of gender and number as lexical properties of nouns and determiners, respectively. Nouns are

either masculine or feminine although grammatical homonyms such as *livre* ‘book-MSC’/‘pound-FEM’ are both (L’Huillier, 1999; Price, 2008). Most nouns have a singular form and mark the plural with *-s* or *-x* (Wagner and Pichon, 1991),¹ while gender is morphologically expressed with various suffixes such as *-e*, *-elle*, *aie*, *-aine* for feminine or *-eau*, *-on*, *-isme* for masculine (Surrige, 1986). The gender and number features have morphosyntactic consequences for adjectives, past participles, determiners and pronouns due to syntactic rules governing structures such as a determiner phrase containing a noun, determiner and adjective (e.g. *la-FEM-SG belle-FEM-SG pomme-FEM-SG verte-FEM-SG* ‘the beautiful green apple’) as well as verbal phrases (e.g. *voilà les-FEM-PL fleurs-FEM-PL que j’ai cueillies-FEM-PL* ‘here are the flowers I picked’).

French children are aware of inflectional morphology before they start receiving formal literacy instruction (e.g. Nagy, Carlisle and Goodwin, 2013). They seem to discover plural markers when they learn to read (Jaffré and Fayol, 2005) and are sensitive to verbal inflectional errors (Carrasco-Ortiz and Frenck-Mestre, 2014). However, it is well documented that 11–12-year-old children still experience difficulties with encoding the appropriate morphosyntactic information in their written production such as number agreement, maybe because although it is semantically motivated, it is often neutralized in speech (e.g. Manesse and Cogis, 2007; Totereau, Brissaud, Reilhac and Bosse, 2013).

Empirical data show that grammatical gender knowledge emerges early on as well (Höhle, Weissenborn, Kiefer, Schulz and Schmitz, 2004; Shi and Melançon, 2010), while knowledge of gender categorization and agreement is robust in 30-month-old toddlers (Cyr and Shi, 2013), but French gender agreement is rarely investigated (Boloh and Ibernou, 2010). It appears that 18-month-old toddlers are sensitive to grammatical gender cues in nominal phrases with an incongruent gender article as in *le-^{*MAS} poussette-FEM* ‘the stroller’ (van Heugten and Christophe, 2015) and master gender agreement on the determiner first, while agreement on the adjective can take longer with frequent errors as late as age 5 (Roulet-Amiot and Jakubowicz, 2006; Royle and Valois, 2010). The most common written gender marker of the feminine, *-e*, is not yet acquired by the end of primary school (Cogis and Brissaud, 2019) or middle school (Brissaud, 2015), and 50% of sixth to ninth graders continue to omit it on adjectives in written production (Bosse, Brissaud and Le Levier, 2020).

Regarding number agreement, Nazzi, Barrière, Goyet, Kresh and Legendre (2011) have established that French babies as young as 18-months are sensitive to grammaticality contrasts for both singular and plural determiners and non-adjacent verbal forms. However, even highly educated adults may produce written subject-verb agreement errors as in *le chien-SG des voisins-PL ^{*arrivent-PL} arrive SG* ‘the neighbors’ dog arrives’ (Fayol and Got, 1991; Fayol, Largy and Lemaire, 1994). This is a well known attraction error whereby verb agreement is realized with the closest noun instead of the subject of the verb (e.g. Bock and

¹*Gens* ‘people’, *arrhes* ‘deposit’, *frais* ‘costs’, *fiançailles* ‘engagement’ are examples of common, invariable plural nouns. The meaning of a few nouns fluctuate with number such as *vacance* ‘vacancy-FEM-SG’, *vacances* ‘vacation-FEM-PLU’, *lettre* ‘letter-FEM-SG’, *lettres* ‘literature-FEM-PLU’ or *menotte(s)* ‘small hand-FEM-SG(PLU)’, *menottes* ‘handcuffs-FEM-PLU’.

Eberhard, 1993; Bock and Miller, 1991; Franck, Vigliocco and Nicol, 2002; Vigliocco, Butterworth and Garrett, 1996). In addition, children's oral production include number inflection on nouns before they do so on verbs (e.g. Bassano, 2000), while their written production show fewer gender and number markings on adjectives than on nouns (Fayol, Totereau and Barrouillet, 2006).²

In summary, early sensitivity and acquisition of number and gender do not preclude persistent difficulties for cases of straightforward agreement within a nominal or verbal phrase. This begs the question of how adult FSs would react to cases of variable or incongruent agreement, referred to as idiosyncrasies for short. To the best of my knowledge, this has not yet been tested empirically, so we do not know whether idiosyncrasies in the standard, prescriptive grammar of French would translate into indeterminacy in the mental grammar of FSs, that is their competence in a generative sense, as measured by their performance in two written tasks, a grammaticality judgment task (GJT) and a preference grammaticality judgment task (PGJT).

However, given that a growing number of experimental studies are showing that "native-speaker convergence is a myth: there are, in fact, considerable individual differences in adult L1 speakers (for recent reviews, see Dąbrowska, 2012, 2015; Farmer, Misyak and Christiansen, 2012; Hulstijn, 2015)" (Dąbrowska, 2019: 73), we may find similar divergences among our participants as they perform two written elicitation tasks, a grammaticality judgment /correction task and a preference/grammaticality judgment task.

For instance, in Mulder and Hulstijn (2011), Dutch L1 speakers ($n = 98$) split by age groups (18–35, $n = 42$; 36–50, $n = 20$; 51–76, $n = 36$) were asked to perform seven lexical tasks and four speaking tasks in order to assess whether their fluency, knowledge and memory varied with their age and education level. Older participants were slower to respond in the lexical tasks, performed more poorly in the two word span tasks, but better in the vocabulary knowledge task. The speaking tasks did not reveal differences between age groups. The authors report the unexpected finding that most participants produced clear violations of nominal gender and subject-verb number agreement in the speaking tasks, regardless of their education level. Dąbrowska (2019) compared the performance of L1 and adult L2 learners on grammatical comprehension, vocabulary and collocations. Although L1 speakers outperformed L2 learners as expected, large individual differences and overlap were found between the two groups. Earlier studies had already shown that L1 speakers' intuitions concerning the grammaticality of certain sentences (e.g. Chipere, 2001) and their comprehension of sentences (e.g. Dąbrowska, 1997) vary depending on their education level.

The next section will provide a descriptive account of idiosyncrasies in agreement from a prescriptive, standard perspective (e.g. Battye et al., 2000), then the methods used to test how L1 French speakers may perform on elicitation tasks with written stimuli exemplifying these idiosyncrasies as well as reflexive and causative verbs. Will they perform as a homogenous group at the 90% accuracy expected of L1

²A reviewer correctly notes that it would interesting to see if subject-verb agreement errors are also produced with audible singular-plural contrasts such as *vient/viennent* 'come-SG/PL'. Phonological representations may indeed contribute to such errors in written French (e.g. Barra Jover, 2009).

speakers (e.g. Dronjic and Helms-Park, 2014) with their performance aligning with prescriptive grammar, or will they diverge from it and show individual differences?

2. IDIOSYNCRASIES IN GENDER AGREEMENT

2.1. Nominal affective constructions

Romance languages such as French, Spanish and Italian exhibit qualitative nominals – also referred to as affective constructions – in a N1 *de* N2 structure with conflictual agreement (e.g. Casillas Martínez, 2003; Masini, 2016) as exemplified in (1a) (Hulk and Tellier, 1998: 183) and (1b, c) (Hulk and Tellier, 2000: 55) for French.

- (1) a. *Ton phénomène de fille est bien distraite/*distrain.*
 your-MSC phenomemon-MSC of girl-FEM is quite absent-minded-FEM /*MSC
 ‘That character of a daughter of yours is quite absent-minded’.
- b. *Son abomination de beau-père est craint/*crainte.*
 his abomination-FEM of father-in-law-MSC is feared-MSC/*FEM
 ‘His abomination of a father-in-law is feared’.
- c. *Ce que ta tornade de fils peut être étourdissant/*étourdissante.*
 how your tornado-FEM of son-MSC can be dizzying-MSC/*FEM
 ‘Your tornado of a son can be dizzying’.

According to Hulk and Tellier (1998, 2000), when N1 and N2 differ in gender, the adjective agrees with the animate N2 assumed to be the nominal head of the construction as in (1a, b, c). However, when the N2 is an inanimate noun, the adjective may or may not agree. In (2a, b) the adjective agrees with the inanimate N2 (Hulk and Tellier, 1998: 185).

- (2) a. *Ta saleté de toit a été repeint /*repeinte des dizaines de fois.*
 your dirt-FEM of roof has been repainted-MSC/*FEM tens of times
 ‘Your dirt of a roof has been repainted tens of times’.
- b. *Les marins trouvent cette saloperie de vent particulièrement exaspérant /*exaspérante.*
 the sailors find this filth-FEM of wind- MSC particularly exasperating-MSC/
 *FEM
 ‘The sailors find this disgusting wind particularly exasperating’.

Examples of an adjective agreeing with the N1 instead of the N2 in cases of inanimate nouns appear in (3) (*ibid*):

- (3) a. *Je peux vous garantir que ce bijou de symphonie sera désormais inscrit /*inscrite dans tous les répertoires.*
 I can guarantee that this jewel-MSC of symphony-FEM will be from now on included-MSC/*FEM in all the repertoires
 ‘I can assure you that from now on, this jewel of a symphony will be included in all the repertoires’.
- b. *Ce chef-d’œuvre de fresque Michelangelo l’a peint/*peinte dans des*

conditions très difficiles.

this masterpiece-MSC of fresco-FEM Michelangelo it painted-MSC/*FEM
in some conditions very difficult

‘Michelangelo painted this masterful fresco in very difficult conditions’

- c. *Je trouve ce chef-d’œuvre de robe absolument ??exquis /??exquise.*

I find this masterpiece-MSC of dress-FEM absolutely ??exquisite-MSC
/?? FEM

‘I find this masterpiece of a dress absolutely exquisite’.

The authors speculate that NS judgments would fluctuate between the two genders in (3c), so presumably, the adjective would agree with either the N1 or the N2. This “striking unease with the data suggests that the masculine form on the adjective/participle in [(3)] is not a reflex of agreement with N1, but rather the default gender choice” (*ibid*, 2000: 57). Unfortunately, the authors do not include any information about the FSs who provided these judgments or how they were elicited. Moreover, it is unclear what they mean by a default gender choice if agreement in either gender is acceptable. It may be more accurate to characterize (3c) as an example of indeterminacy or variability.

2.2. Past participles

Some participles used as adjectives agree with the noun they modify only when they are postposed: *ci-joint* ‘attached’, *approuvé* ‘approved’, *attendu* ‘expected’, *étant donné* ‘given’, *excepté* ‘excepted’, (*y-*, *non-*)*compris* ‘included’, *passé* ‘passed’, *supposé* ‘supposed’, *vu* ‘seen/given’, as in (4)³:

- (4) a. *Il est onze heures passées/*passé.*
it is eleven hours-FEM-PL past-FEM-PL/*MSC-SG
‘It is past eleven p.m.’
- b. *Passé /*passées onze heures, il sera trop tard.*
past- MSC-SG /* FEM-PL eleven hours-FEM-PL, it be-FUT too late
‘After eleven p.m., it will be too late’.
- c. *Veuillez lire les pièces ci-jointes/*ci-joint.*
please read the documents- EM-PL attached-FEM-PL /*MSC-SG
‘Please read the attached documents’.
- d. *Ci-joint /*ci-jointes les pièces envoyées par le secrétaire.*
attached the documents-FEM -SG/*FEM-PL sent-FEM-PL by the secretary
‘Attached are the documents sent by the secretary’.

Agreement appears to be optional with *fini* ‘finished’ and *mis à part* ‘except for’⁴:

- (5) a. *Fini/finies les vacances!*
finished-MSC-SG/ FEM-PL the vacations
‘The vacations are over’.

³An anonymous reviewer points out that such cases were regulated by the “*Arrêté français du 28 décembre 1976 relatif aux tolérances grammaticales et orthographiques*” (cf. Journal officiel du 9 Février 1977).

⁴An anonymous reviewer points that liaison may play a role in the feminine agreement of *mise à part*.

- b. *Mis /mise à part ma maladie, je vais bien.*
 excepted- MSC-SG/ FEM- SG my sickness, I go well
 'Except for my sickness, I'm doing well'.

Finally, *ci-inclus* 'included' never agrees in gender or number with the noun it modifies, be it preposed or postposed as in (6).

- (6) a. *J'ai lu toutes les lettres ci-inclus/*ci-includes.*
 I read all the letters-FEM-PL included MSC-PL/*FEM-PL
 'I read all the letters that included in here'
 b. *Ci-inclus/*ci-includes les lettres du président.*
 included-MSC-PL/*FEM-PL the letters-FEM-PL of the president
 'The letters of the president are included in here'

Past participles in compound tenses such as *passé composé* also agree in gender and number with direct object pronouns preceding them as in (7) (Bouchard, 1997):

- (7) a. *Les lettres? Oui je les ai écrites.*
 the letters- FEM-PL. Yes I them have written-FEM-PL
 'The letters? Yes, I wrote them'.
 b. *Voilà les chemises que j'ai repassées.*
 here are the shirts-FEM-PL that I have ironed- FEM-PL
 'Here are the shirts I ironed'.

However, agreement is optional when there is overt *wh*-movement of the quantifier *combien* as in (8a), but not when *combien* remains *in situ* as in (8b):

- (8) a. *Combien en avez-vous acheté(es)?*
 how many of them have you bought-FEM-PL
 'How many did you buy?'
 b. *Vous en avez acheté/*es combien?*
 you of them have bought-* FEM-PL how many
 'How many did you buy?'

Boivin (1998) argues that the lack of agreement is an indication that there is no movement of the object through [Spec, AgrO]. Moreover, *en* does not agree with past participles, contrary to other direct object pronouns, as in (9):

- (9) a. *Les roses? Oui, Sophie les a achetées/*acheté*
 the roses? Yes, Sophie them has bought-FEM-PL/*SG
 'The roses? Yes, Sophie bought them'
 b. *Les roses? Oui, Sophie en a acheté/*achetées*
 the roses? Yes, Sophie them has bought/*FEM-PL
 'The roses? Yes, Sophie bought some'

Hence, the past participle agrees with the preposed (but not postposed) direct objects, but anecdotal evidence as well as oral data from a variationist

perspective (e.g. Gaucher, 2015) suggest that a few reflexive verbs tend to be difficult even for FSs such as *se rendre compte de* ‘to realize something’ (*compte* is the direct object) and causative *faire* as in *elle les a fait couper* ‘she had them cut’; whatever the object may be (e.g. flowers, hair), it is a complement of *couper*, not *fait*, so the past participle does not agree with the direct object.

2.3. Gender fluctuation with number

The gender of a few nouns fluctuates with number: *orgue* ‘organ’, *délice* ‘delight’ and *amour* ‘love’ are masculine in the singular, but feminine in the plural. *Gens* ‘people’ is an invariable plural noun with either male and/or female referents, but it agrees in the feminine with preposed adjectives and in the masculine with postposed adjectives as in *les vieilles-FEM/*vieux-MASC gens sont heureux-MASC/*heureuses-FEM* ‘old people are happy’. Moreover, *les jeunes gens* ‘young people’ is always masculine and the referents may be all masculine or both masculine and feminine, but not all feminine as in *les jeunes gens intelligents-MASC / *intelligentes-FEM* ‘the intelligent young people’.

2.4. Epicenes

There are several nouns with animate referents which are only masculine or feminine regardless of the gender of the referent. For instance, *ange* ‘angel’, *bébé* ‘baby’, *témoin* ‘witness’, *génie* ‘genius’ or *ascendant* ‘ancestor’ are masculine while *victime* ‘victim’, *connaissance* ‘acquaintance’, *doublure* ‘body double’ or *personne* ‘person’ are feminine. This is also the case for some titles such as *Altesse* ‘Royal Highness’, *Eminence* ‘Eminence’, *Excellence* ‘Excellency’ or *Sainteté* ‘holiness’ which are all feminine.⁵

2.5. Invariable adjectives

Adjectives typically agree in number and gender with the noun they modify, but there are quite a few which are invariable in that they are not marked for gender or number such as color adjectives derived from nouns (e.g. *argent* ‘silver’, *lavande* ‘lavender’), with a few exceptions for both gender and number (e.g. *violet(s)-MSC-SG(PL)*, *violette(s)-FEM-SG(PL)* ‘purple’) or for gender, but not number (e.g. *châtain/châtains* ‘chestnut brown-SG-PL’). Adjectives of color modified by another adjective remain invariable as well (e.g. *une jupe-FEM gris-MSC clair-MSC* ‘a light-gray skirt’) as do adjectives borrowed from other languages (e.g. *clean*, *cool*, *halal*, *inuit*, *zen*).

To summarize, French displays various idiosyncrasies in agreement alongside straightforward agreement within a noun phrase or a verbal phrase. The affective constructions appear to exhibit inherent variability depending on the animacy of N2, while the other cases (i.e. past participles, *combien*, gender fluctuation with number, epicenes and invariable adjectives) can be categorized

⁵Not tested here (but see Ayoun 2018) are also epicenes, which may be used with either gender depending on the referent such as *juge*, *artiste*, *partenaire*, *stagiaire*.

as well established exceptions in standard, prescriptive grammars (e.g. Grevisse and Goosse, 2016; Riegel, Pellat and Rioul, 2018). The question is how do FSs react to these idiosyncrasies in an experimental setting? A study was designed to elicit their judgments with two different tasks. The stimuli included all the idiosyncrasies in agreement reviewed above. The causative and reflexive verbs are straightforward cases of agreement, but they were included because of anecdotal evidence suggesting they may be difficult for FSs.

3. METHODS

3.1. Research questions

The main research question asks: will FSs' performance align with prescriptive grammar with a minimum of 90% accuracy, or will it diverge from it and show individual differences? In other words, will FSs handle cases of idiosyncratic agreement as a homogeneous group because they share the same mental grammar, or will their performance be heterogeneous because their mental grammar allows for some indeterminacy and divergence from standard, prescriptive grammar?

If the FSs' performance displays some indeterminacy, will it depend on: a) the elicitation task? b) the type of idiosyncrasies? c) their education level and/or age?

The N1 *de* N2 constructions will be examined separately because it is unclear whether adjectives agree with an animate N2, but not necessarily an inanimate N2. They are thus a case of indeterminacy in prescriptive grammar. Again, participants are expected to perform at least at 90% accuracy, the minimum criterion for L1 speakers (e.g. Dronjic and Helms-Park, 2014).

3.2. Participants and tasks

The participants are L1 French speakers ($n = 168$) who lived in various cities in France at the time of the data collection. Academic listservs were used to recruit professors and students who were then asked to enlist their friends and families in order to reach people of diverse socio-economic backgrounds. A background questionnaire revealed that the final composition of the participant pool included graduate students in M.A. or doctoral programs ($n = 57$), professors ($n = 49$), non-academic professionals with graduate degrees ($n = 13$), non professionals (high school graduates) ($n = 35$) and retired people ($n = 14$)⁶. 38 male and 130 female participants averaged 39.51 years in age (19–74 range) (Ayoun, 2018).

The participants performed a grammaticality judgment task (GJT) and a preference/grammaticality judgment task (PGJT). Both tasks were written, computerized, and accessible from a website and without time limits. Upon completion, the participants clicked on a submit button and the raw data were saved to a folder so that they may be coded to run statistical analyses. The data collection was spread over three sessions: the participants completed the GJT during the first session, then the PGJT twice, once during session 2 and once during session 3.

⁶The retired answer was unfortunately not anticipated, so the background questionnaire did not request participants to indicate what their professions were when they were active.

The PGJT presented pairs of complete sentences that differed only by the presence or lack of agreement. Participants had to make two decisions with the help of pull-down menus: first choose the sentence they preferred, then indicate whether the other sentence, that is, the one they did not choose, was correct, incorrect or if they did not know. The stimuli included 24 pairs of sentences for each of the two sessions for a total of 48 sentences.

The GJT required the participants to indicate whether a complete sentence was correct, incorrect or if they did not know; they were asked to correct the sentences they rejected as incorrect. The stimuli included 64 complete sentences illustrating affective structures ($n = 10$), epicenes ($n = 14$), idiosyncrasies (as a general category including *amours*, *orgues*, *Pâques*, *délices*, $n = 8$), past participles ($n = 5$), causative ($n = 6$), reflexive verbs ($n = 3$), invariable adjectives ($n = 3$). The ‘don’t know’ option was included to reduce the possibility that participants would guess if they were unsure; having that information increases the reliability of their answers and provides an indication of their confidence levels. Participants were instructed to rely on their first intuition while performing both tasks.

4. RESULTS

4.1. Grammaticality judgment task

The accuracy means from a chi-square analysis are displayed in Table 1 and show that overall, participants performed relatively well in correctly accepting grammatical stimuli (84.1%), but poorly in rejecting ungrammatical stimuli (50.9%). The difference is statistically significant ($p < .001$). Their confidence levels measured by the ‘don’t know’ percentages are high since the percentages are low (2.7% overall).

Table 2 displays accuracy means by categories which include everything but the N1 *de* N2 constructions which will be examined separately. The only accuracy mean above 90% is for the grammatical stimuli (92.5%) illustrating epicenes; the other means are much lower and always reflect a better performance on grammatical than ungrammatical stimuli. All the differences are significantly different. The ‘don’t know’ percentages vary a bit, but remain low 1.8%–4.9%.

Table 3 shows how the participants performed in each of the sub-categories of idiosyncrasies. With the exception of *gens*, *amour*, *Pâque(s)*, the accuracy means for correctly accepting grammatical stimuli are much better than for correctly rejecting ungrammatical stimuli. The difference is statistically significant (Pearson $\chi^2 = 568.656$, $df = 2$, $p < 0.001$). *Pâque(s)* and *délice(s)* had only grammatical stimuli. The 90% criterion is met only for *amour* and invariable adjectives. The ‘don’t know’ percentages vary from 0.6% for *amour* to 6.3% for reflexive verbs and concern ungrammatical stimuli in both cases.

Table 4 shows the results for the N1 *de* N2 constructions. Participants indicated whether they thought the sentences were grammatical (G), ungrammatical (U) or if they did not know (DK). The ‘corrections’ column lists the number and percentage of participants (out of 168) who provided corrections to the sentences they rejected as ungrammatical (see Appendix A for the complete list).

Table 1. Overall accuracy means on the GJT

stimuli		participants' responses			total
		grammatical	ungrammatical	don't know	
grammatical stimuli	count	4947	791	142	5880
	%	84.1%	13.3%	2.4%	100%
ungrammatical stimuli	count	1306	1454	96	2856
	%	45.7%	50.9%	3.4%	100%
total	count	6253	2245	238	8736
	%	71.6%	25.7%	2.7%	100%
Pearson $\chi^2 = 1451.984$, $df = 2$, $p < .001$					

The results for animate nouns are mixed: with a feminine animate N2 (stimuli 3, 9, 12), participants tended to accept agreement with the masculine N1; however, with a masculine animate N2, they rejected agreement with a feminine N1. There is a stronger tendency to accept feminine agreement of an inanimate N2. The only stimulus (#15) with a feminine N1 and masculine N2 split the participants: 50.6% for accepting as grammatical and 45.2% for rejecting as ungrammatical.

The corrections indicate that participants generally preferred a masculine agreement for an animate N2 (41.7% and 50.6% of participants) as well as the inanimate N2 (29.8% of participants). Most of the causative corrections were appropriate (39.3% to 45.2% of participants), but erroneous corrections were provided for 4 grammatical stimuli by a small percentage of participants (7.1% – 13.6%). *Gens* generated numerous corrections in addition to the appropriate *certaines gens* (24.4% of participants), most replaced *gens* with *certaines personnes* or *les vieilles personnes*. The past participles of reflexive verbs were appropriately corrected, but to varying degrees (*se sont acheté*, 29.2%; *s'est souvenue*, 17.3%; *se sont rendu compte*, 26.8%). Participants' corrections showed they preferred a lack of agreement for *combien* (*livres*, 31.5%; *dragées*, 22.6%), but not *aspirines* (17.3%; and seven other corrections). The past participles were generally appropriately corrected (*y compris*, 45.8% to 49.4%; *étant donné*, 35.1%; *passé*, 29.8%), with only a few erroneous corrections for *étant donné* (9.5%). The epicenes generated a few overcorrections (*ascendant*, 13.7%; *cancre*, 11.9%). The nouns with a fluctuating gender with number were appropriately corrected (e.g. *orgues*, 34.5%; *amour*, 60.7%); but 53.7% of the participants erroneously corrected *délices*.

The results of the chi-square analysis in Table 5 reveal a significant difference between correctly accepting (81.4%–85.5%) and correctly rejecting (45.4%–61.3%) stimuli for each of the five groups of participants. The professional group performed best followed by the professor, retired, non-professional and student groups.

An ANOVA was performed to obtain finer-grained results. Accuracy means are displayed in Table 6 by correctly accepted (CA), incorrectly rejected (IR) and don't

Table 2. Accuracy means on the GJT by categories

categories	stimuli	participants' responses				
			grammatical	ungrammatical	don't know	total
past participles	grammatical stimuli	count	504	309	27	840
		%	60.0%	36.8%	3.2%	100%
	ungrammatical stimuli	count	455	504	49	1008
		%	45.1%	50.0%	4.9%	100%
Pearson $\chi^2 = 40.707$, $df = 2$, $p < 0.001$						
idiosyncracies	grammatical stimuli	count	1534	271	43	1848
		%	83.0%	14.7%	2.3%	100%
	ungrammatical stimuli	count	220	429	23	672
		%	32.7%	63.8%	3.4%	100%
Pearson $\chi^2 = 610.184$, $df = 2$, $p < 0.001$						
epicenes	grammatical stimuli	count	2643	152	61	2856
		%	92.5%	5.3%	2.1%	100%
	ungrammatical stimuli	count	333	162	9	504
		%	61.1%	32.1%	1.8%	100%
Pearson $\chi^2 = 363.905$, $df = 2$, $p < 0.001$						
causatives	grammatical stimuli	count	266	59	11	336
		%	79.2%	17.6%	3.3%	100%
	ungrammatical stimuli	count	298	359	15	672
		%	44.3%	53.4%	2.2%	100%
Pearson $\chi^2 = 118.960$, $df = 2$, $p < 0.001$						

know correct (DK-C) for grammatical stimuli; correctly rejected (CR), incorrectly accepted (IA) and don't know incorrect (DK-I) for ungrammatical stimuli.

The average for IR is 13.7% with a 12.7%–16.5% range, while the means average for IA is 46.98% with a 40.1%–51.1% range, so participants clearly failed to reject quite a few ungrammatical stimuli. The participants' performance decreases from retired (56.8%) to professor (51.6%), non-professional (47.7%), professional (45.8%) and student (44.1%) for CR. The SDs vary quite a bit as well suggesting individual differences between the participants. A statistically significant difference between groups was found for correctly rejected stimuli (sum of squares = 2669.242, $df = 4$, mean square = 667.311, $F = 2.518$, $p = 0.043$, Eta-squared = 0.024). A post hoc Tukey test revealed that the only difference approaching significance was between the student and the retired groups (mean difference = -12.74, standard error = 4.856, $p = 0.071$).

In order to see whether age was a factor in the participants' performance in addition to their education level, we ran a Pearson correlation test. We found a

Table 3. Accuracy means by categories of idiosyncrasies on the GJT

stimuli		participants' responses		
		grammatical	ungrammatical	don't know
<i>gens</i>	grammatical stimuli	80.4%	16.7%	3.0%
	ungrammatical stimuli	34.7%	61.1%	4.2%
Pearson $\chi^2 = 86.915$, $df = 2$, $p < 0.001$				
<i>amour</i>	grammatical stimuli	94.0%	4.8%	1.2%
	ungrammatical stimuli	10.1%	89.3%	0.6%
Pearson $\chi^2 = 241.559$, $df = 2$, $p < 0.001$				
<i>orgue(s)</i>	grammatical stimuli	82.7%	11.9%	5.4%
	ungrammatical stimuli	47.6%	48.8%	3.6%
Pearson $\chi^2 = 54.181$, $df = 2$, $p < 0.001$				
<i>Pâque(s)</i>	grammatical stimuli	86.3%	11.3%	2.4%
<i>délice(s)</i>	grammatical stimuli	59.2%	39.3%	1.5%
Pearson $\chi^2 = 32.583$, $df = 2$, $p < 0.001$				
<i>combien/en</i>	grammatical stimuli	60.7%	33.3%	6.0%
	ungrammatical stimuli	56.8%	38.7%	4.5%
Pearson $\chi^2 = 1.659$, $df = 2$, $p < 0.436$				
reflexive verbs	grammatical stimuli	73.8%	23.2%	3.0%
	ungrammatical stimuli	43.5%	50.3%	6.3%
Pearson $\chi^2 = 41.500$, $df = 2$, $p < 0.001$				
invariable adjectives	grammatical stimuli	92.1%	6.3%	1.6%
Pearson $\chi^2 = 568.656$, $df = 2$, $p < 0.001$				
total	grammatical stimuli	75.0%	22.5%	2.5%
	ungrammatical stimuli	39.3%	56.5%	4.2%
Pearson $\chi^2 = 568.656$, $df = 2$, $p < 0.001$				

positive correlation for correctly rejected stimuli ($r = .260$, $p < 0.001$), a negative correlation for incorrectly accepted stimuli ($r = -.235$, $p = 0.002$), and a small positive correlation between a correct percentage (combining correctly accepted and correctly rejected stimuli) ($r = .159$, $p = 0.039$). There was no correlation for correctly accepted stimuli alone or the 'don't know' percentages.

Finally, we ran an ANOVA with a subset of the participants ($n = 25$), those who had obtained at least 90% on correctly accepted stimuli (see Appendix C for complete results). The means range from 92.1% to 97.4% for correctly accepted stimuli (CA), and they are close on incorrectly rejected stimuli (IR) (0.0%–7.9%). However, the most interesting finding is regarding ungrammatical stimuli: although they performed as expected on CA, there is a wide variation between

Table 4. Findings by stimuli for N1 *de* N2 constructions

stimuli	participants' responses				
	G	U	DK	corrections	
stimuli N1 de N2 animate					
3. <i>Ton phénomène de fille est bien distraite</i>	61.3%	29.8%	8.9%	25	14.9%
9. <i>Ce clown de Jeanne était tordant</i>	58.9%	32.7%	8.3%	27	16.1%
12. <i>Ce numéro de Marie est toujours amusant</i>	87.5%	9.5%	3.0%	6	3.6%
21. <i>Votre tornade de fils est tout essoufflée</i>	31.0%	66.1%	3.0%	85	50.6%
35. <i>Son abomination de mari est encore emprisonnée</i>	31.0%	64.3%	4.8%	70	41.7%
Pearson $\chi^2 = 178.127$, $df = 8$, $p < 0.001$					
stimuli N1 de N2 inanimate					
15. <i>Ta saleté de toit a été repeinte une dizaine de fois</i>	50.6%	45.2%	4.2%	50	29.8%
18. <i>Ta reproduction de film a été mal reçue</i>	88.7%	6.0%	5.4%	3	1.8%
23. <i>Ce bijou de symphonie sera inscrit au répertoire</i>	83.9%	11.9%	4.2%	14	8.3%
27. <i>Ce chef d'œuvre de peinture sera exposé au MOMA</i>	89.3%	7.1%	3.6%	6	3.6%
44. <i>Son imitation de bijou n'a pas encore été vendue</i>	79.2%	17.3%	3.6%	19	11.3%
Pearson $\chi^2 = 122.891$, $df = 8$, $p < 0.001$					

Table 5. Accuracy means by participant background

Participants	answer key	Participants' responses		
		correct	incorrect	don't know
professor	correct	85.0%	12.8%	2.2%
	incorrect	41.5%	55.0%	3.5%
Pearson $\chi^2 = 529.121$, $df = 2$, $p < 0.001$				
student	correct	83.5%	13.5%	3.0%
	incorrect	50.8%	45.4%	3.8%
Pearson $\chi^2 = 373.668$, $df = 2$, $p < 0.001$				
retired	correct	81.4%	16.5%	2.0%
	incorrect	36.6%	56.8%	3.1%
Pearson $\chi^2 = 151.497$, $df = 2$, $p < 0.001$				
professional	correct	85.5%	13.0%	1.5%
	incorrect	50.2%	61.3%	3.6%
Pearson $\chi^2 = 107.640$, $df = 2$, $p < 0.001$				
non-professional	correct	84.6%	13.2%	2.2%
	incorrect	46.2%	50.9%	2.9%
Pearson $\chi^2 = 305.269$, $df = 2$, $p < 0.001$				

Table 6. ANOVA results by participant background

	professor		student		retired		professional		non-professional	
	means	SD	means	SD	means	SD	means	SD	means	SD
CA	85.0%	8.29	83.4%	7.66	81.4%	12.56	85.5%	6.11	84.6%	7.27
IR	12.7%	7.69	13.5%	6.92	16.5%	9.38	12.9%	4.75	13.2%	7.87
DK-C	2.2%	3.65	3.0%	4.05	2.0%	3.95	1.5%	2.21	2.2%	3.53
IA	41.5%	16.12	50.7%	19.43	36.6%	9.56	47.9%	19.92	46.2%	18.27
CR	54.9%	16.48	45.4%	19.50	61.3%	8.85	48.4%	21.36	50.9%	18.87
DK-I	3.4%	5.87	3.8%	5.82	2.1%	4.38	3.6%	5.11	2.8%	5.59

participants for rejecting ungrammatical stimuli (CR) with accuracy means ranging from 17.4% to 73.9%. The post hoc Tukey test shows that the mean difference (-12.7438) between students and retired almost reaches statistical significance ($p = 0.071$). For instance, participant 4 obtained 94.7% (CA) and 5.3% (IR) on grammatical stimuli, but only 39.1% (CR) and 39.1% (IA) on ungrammatical stimuli; the ‘don’t know’ percentage also jumps from 0.0% for grammatical to 21.7% for ungrammatical stimuli.

4.2. Preference/grammaticality judgment task

The statistical analyses combined the raw data from both sessions. The reader may recall that participants first indicated which of two sentences they preferred and then whether the other sentence was (un)grammatical or they did not know. Table 7 displays the accuracy means for the preferred sentences, while Table 8 shows how the participants rated the other sentence.

Hulk and Tellier’s predictions are supported for animate nouns since participants chose the sentence where the masculine or feminine N2 agrees with the adjective for four out of five stimuli. The predictions are also supported for inanimate nouns since Hulk and Tellier argue that the adjective may or not agree and participants are almost evenly split: the N2 agrees with the adjective for three out of five stimuli. However, they reject a slightly greater number of sentences as ungrammatical for inanimate versus animate nouns (64.4% vs 59.4%). The accuracy means for the other idiosyncrasies range from 71% to 75.2% and are even lower for rejecting ungrammatical sentences in the second part of the task (63.3% to 74.3%). The ‘don’t know’ percentages are much higher than for the GJT, indicating lower confidence levels.

Tables 9 and 10 show accuracy means by participant backgrounds for the preferred sentence and grammaticality of the rejected sentence. They are significantly different for the latter, but not the former, with the retired group obtaining the highest means (82.1%) followed by the professional group (79.2%), while the students and professors obtained the lowest means (74.5% and 74.8%, respectively).

Table 11 displays the detailed findings for the N1 *de* N2 constructions.

Table 7. Preferred sentence accuracy means

Categories	participants' responses			total
		Correct	Incorrect	
past participles	count	1008	840	1848
	%	54.5%	45.5%	100%
idiosyncracies	count	2805	555	3360
	%	83.5%	16.5%	100.0%
epicene	count	555	2805	3360
	%	16.5%	83.5%	100.0%
causative	count	383	625	1008
	%	38.0%	62.0%	100.0%
total	count	6401	2335	8736
	%	73.3%	26.7%	100.0%
Pearson $\chi^2 = 602.633$, $df = 3$, $p < 0.001$				

Table 8. Non-preferred sentence grammaticality

Categories	participants' responses			total	
		grammatical	ungrammatical		don't know
past participles	count	2976	314	70	3360
	%	88.6%	9.3%	2.1%	100.0%
idiosyncracies	count	1754	700	66	2520
	%	69.6%	27.8%	2.6%	100.0%
epicene	count	2976	314	70	3360
	%	88.6%	9.3%	2.1%	100.0%
causative	count	564	418	26	1008
	%	56.0%	41.5%	2.6%	100.0%
total	count	6253	2245	238	8736
	%	71.6%	25.7%	2.7%	100.0%
Pearson $\chi^2 = 981.808$, $df = 6$, $p < 0.001$					

The 'pref(erence)' column shows the percentage of participants who preferred sentence (a) or (b); the next three columns indicates how they rated the other sentence, that is, the sentence they did not select. For instance, 41.1% of the participants preferred sentence (1a) and the other sentence was rated as grammatical by 14.5%, ungrammatical by 66.7%, while 18.8% did not know.

Table 9. Preferred sentence accuracy by participant background

Background	correct	incorrect
professor	31.1%	68.9%
student	29.5%	70.5%
retired	32.4%	67.6%
professional	29.5%	70.5%
non professional	29.5%	70.5%
Pearson $\chi^2 = 3.777$, $df = 4$, $p = 0.437$		

Table 10. Non-preferred sentence grammaticality by participant background

Background	grammatical	ungrammatical	don't know
professor	11.0%	74.8%	14.2%
student	10.7%	74.5%	14.9%
retired	6.5%	82.1%	11.3%
professional	7.9%	79.2%	13.0%
non professional	11.5%	77.4%	11.1%
Pearson $\chi^2 = 36.9756$, $df = 8$, $p < 0.001$			

Participants always prefer for the animate N2 to agree with the adjective whether it is masculine or feminine. With an inanimate N2, there is no clear preference: agreement can be with N1 (i.e. stimuli 7a, 14b) or N2 (i.e. stimuli 5a, 4b, 16a), regardless of gender.

The complete results for the other categories appear in Appendix B. They are summarized in Table 12.

The 'accurate preference' column shows the percentage of participants who selected the grammatical stimuli and the next two columns indicate the percentage who correctly rejected ungrammatical stimuli and incorrectly rejected grammatical stimuli. Only *gens* meets the 90% criterion with a 90.6% average, but participants rejected almost as many grammatical (60.7% average) as ungrammatical stimuli (67% average). The participants' performance in the other categories is well below 90% with a wide range depending on the stimuli. They perform best at rejecting ungrammatical stimuli with reflexive verbs and worst with *amour*.

Table 12 does not include *combien* because agreement is optional when there is overt movement and that is reflected in the participants' responses who are almost equally split between agreement (56.3%) and non agreement (54.9%), but a larger percentage of participants reject the former than the latter as ungrammatical (average of 80.1% and 61%, respectively). The 'don't know' responses range from 2.5% to 26.5%.

Table 11. N1 de N2 constructions

N1 de N2 animate	participants' responses			
	Pref.	G	U	DK
1a. <i>Mon cauchemar de belle-mère sera absent, Dieu merci</i>	41.1%	23.2%	59.6%	17.2%
1b. <i>Mon cauchemar de belle-mère sera absente, Dieu merci</i>	58.9%	14.5%	66.7%	18.8%
3a. <i>Cette catastrophe de gamin s'est débrouillée pour tomber</i>	35.7%	25.0%	61.1%	13.9%
3b. <i>Cette catastrophe de gamin s'est débrouillé pour tomber</i>	64.3%	30.0%	53.3%	16.7%
13a. <i>Ce singe d'actrice n'a pas été retenue pour ce film</i>	56.6%	21.9%	63.0%	15.1%
13b. <i>Ce singe d'actrice n'a pas été retenu pour ce film</i>	43.5%	15.8%	63.2%	21.1%
16a. <i>Cette andouille de Paul s'est perdue en ville</i>	24.4%	21.3%	61.4%	17.3%
16b. <i>Cette andouille de Paul s'est perdu en ville</i>	75.6%	14.6%	70.7%	14.6%
2a. <i>Cette beauté de mannequin est invitée de partout</i>	83.9%	33.3%	48.1%	18.5%
2b. <i>Cette beauté de mannequin est invité de partout</i>	16.1%	31.9%	49.6%	18.4%
N1 de N2 inanimate	Pref.	G	U	DK
5a. <i>Ta cochonnerie de vélo s'est écrasé contre le mur</i>	50.6%	20.5%	62.7%	16.9%
5b. <i>Ta cochonnerie de vélo s'est écrasée contre le mur</i>	49.4%	29.4%	58.8%	11.8%
7a. <i>Ce cauchemar d'aventure sera bientôt terminé</i>	78.0%	13.5%	75.7%	10.8%
7b. <i>Ce cauchemar d'aventure sera bientôt terminée</i>	22.0%	14.5%	69.5%	16.0%
4a. <i>Cet amour de robe a été cousu à la main</i>	47.0%	9.0%	75.3%	15.7%
4b. <i>Cet amour de robe a été cousue à la main</i>	53.0%	12.7%	65.8%	21.5%
14a. <i>Ce rêve de poupée a été vendue aux enchères</i>	45.8%	31.9%	57.1%	11.0%
14b. <i>Ce rêve de poupée a été vendu aux enchères</i>	54.2%	14.3%	58.4%	27.3%
16a. <i>Leur merveille de spectacle sera très applaudi</i>	67.9%	31.3%	50.0%	18.5%
16b. <i>Leur merveille de spectacle sera très applaudie</i>	32.1%	14.0%	67.5%	18.4%

5. DISCUSSION AND CONCLUSION

FSs performed two different elicitation tasks exemplifying various cases of idiosyncratic agreement to address the main research question of whether their performance would align with prescriptive grammar or would diverge from it and show individual differences. The results support the latter since the participants' performance rarely reached the 90% criterion expected of L1 speakers.

On the GJT, the highest percentage of 92.5% is for epicenes on correctly accepted stimuli, but they rejected only 32.1% of ungrammatical stimuli; they performed equally poorly at rejecting ungrammatical stimuli for idiosyncrasies (63.8%) and causatives (53.4%) while correctly accepting 83.0% and 79.2% of the stimuli, respectively. The participants' performance was equally poor on the PGJT. Aside from the particular case of affective constructions, participants preferred the correct sentence for 71%, 71.8% and 75.2% of the causatives, epicenes and

Table 12. Accuracy preference/(un)grammaticality

Category		participants' responses		
		accurate preference	correctly rejected	incorrectly rejected
invariable adjectives	average	84.1%	84.8%	57.7%
	range	76.8%–92.4%	82.2%–87.1%	50%–61.5%
causative	average	71%	79.3%	46.8%
	range	64.3%–76.2%	78.9%–79.5%	32.5%–69.6%
past participle	average	76.9%	73.9%	63.9%
	range	67.3%–88.7%	67.3%–86.2%	57.9%–70.5%
reflexive verbs	average	78.6%	90%	81.4%
	range	70.2%–87.5%	81.7%–100%	73%–93.2%
epicene	average	77.6%	67.4%	41.8%
	range	41.1%–97.6%	44.9%–97.6%	18.5%–75%
number	average	74.2%	80%	64.7%
	range	19.6%–100%	66%–93.5%	63.6%–86.7%
<i>gens</i>	average	90.6%	67%	60.7%
	range	84.5%–95.8%	59.3%–78.9%	34.8%–87.5%
<i>amour</i>	average	72.3%	56.7%	61.2%
	range	71.4%–73.2%	49.2%–64.2%	57.8%–64.6%

idiosyncrasies, respectively. They tended to rate the non-preferred sentences as ungrammatical (69.8%, 63.3% and 74.3%, respectively).

Since the FSs' performance displayed some indeterminacy, we can address the other research questions. First, their performance did depend on the elicitation task. Overall, they performed better at accepting grammatical stimuli than rejecting ungrammatical stimuli on the GJT. But, excluding affective constructions, their highest accuracy means when selecting the sentences they preferred on the PGJT is only 83.5%. Even when they selected the appropriate sentence, they sometimes failed to reject its ungrammatical counterpart. Participants also provided some ungrammatical corrections to sentences they had appropriately rejected on the GJT.

This uneven performance betrays an uncertainty on the part of these FSs in spite of their confidence levels which were generally high, but not always. They were more confident on the GJT (0.6%–6.3% of 'don't know' responses) than on the PGJT (11.7%–17.3% for the non-preferred sentence grammaticality and up to 27.3% for affective constructions). L1 speakers' confidence is generally high with ceiling performance on various tasks as with Italian L1 speakers whose accuracy on a written grammatical gender assignment task ranged from 90.0% to 99.7% along with negligible 'don't know' percentages (0%–0.1%) (Ayoun and Maranzana, 2022).

L1 speakers are also typically able to correctly accept grammatical stimuli while correctly rejecting ungrammatical stimuli. For instance, in Kail (2004), French adults were highly accurate in their performance of an on-line sentence processing task, failing to detect grammatical violations only 3.7% of the time. Our participants' failure to reject an average of 45.7% of ungrammatical stimuli is thus surprising and difficult to explain if one assumes that L1 speakers' mental grammars follow prescriptive rules.

Second, the FSs' performance depended on the category of idiosyncrasies. They did well with *amour*, invariable adjectives and epicenes on the GJT, but only 60.0% of participants correctly accepted participles, for instance. The appropriateness of the corrections depended on the type of participles, exposing another indeterminacy. The PGJT reveals a variable performance as well: participants did well with invariable adjectives and *gens*, but had high means for incorrectly rejecting grammatical stimuli exemplifying participles and reflexive verbs.

Third, their personal background partially influenced the FSs' performance. The education level impacted the accuracy means for correctly accepting sentences on the GJT (from 81.4% for retired to 85.0% for professor and 85.5% for professional); there is a bigger difference between groups on correctly rejecting sentences that is less dependent on the level of education (45.4% for student to 61.3% for professional). In addition, positive correlation was found between age and correctly rejected stimuli ($r = .260$, $p < 0.001$), a negative correlation for incorrectly accepted stimuli ($r = -.235$, $p = 0.002$), and a small positive correlation with the overall correct percentage ($r = .159$, $p = 0.039$). In other words, older participants performed better than younger participants.

Regarding affective constructions, Hulk and Tellier's predictions were supported: the adjective agrees with an animate N2, but not necessarily with an inanimate N2. It appears that the participants' performance reflects the indeterminacy present in the grammar itself. Indeed, indeterminacy is part of language which is naturally reflected in L1 grammars⁷. We acknowledge the small number of stimuli for both animate and inanimate nouns. Future studies should include a larger number of both. Also, since Spanish exhibits similar affective constructions, it would be interesting to compare L1 French and L2 Spanish participants on at least two different elicitation tasks with similar stimuli.

These results are thus consistent with those obtained on a gender assignment task, the first task these participants completed: strong lexical and gender effects with an overall accuracy of 72.5% and a significantly better performance on masculine nouns (82.4%) than feminine nouns (73.8%) or nouns which are both masculine and feminine (61.5%) were found. The participants' performance also depended on whether the stimuli were simple nouns or compounds, common or uncommon, or had a vocalic or consonantal initial. A strong lexical effect confirmed the hypothesis that gender must be acquired for each individual lexical item (Ayoun, 2018).

The results are also consistent with previous studies showing individual differences in adult L1 speakers. How do we account for them and should we

⁷For a discussion of feature indeterminacy and resolution, see Dalrymple and Kaplan (2000). See also Fedden (2019) for a sample of 22 different languages displaying sporadic agreement.

attempt to reconcile participants' performance on structures illustrating prescriptive rules of standard grammars? From a generative perspective, it was assumed that a grammar is "descriptively adequate to the extent that it correctly describes the intrinsic competence of the idealized native speaker" (Chomsky, 1965: 24). In that sense, current standard grammars do not describe our FSs' competence, if their performance is an accurate reflection of their competence. Thus, grammars could adopt a more flexible approach and relax their prescriptive rules, or we could accept FS variability as proposed by Hulstijn (2015) with the BLC-HLC (Basic Language Cognition-High Language Cognition) theory within a usage-based perspective. Basic language cognition is defined as the language cognition that all L1 speakers share, while differences are observed in higher, extended language cognition. BLC is limited to frequent grammatical structures and common lexical items in speech, while HLC applies to infrequent morphosyntactic structure and uncommon lexical items, both in written and spoken language. The BLC-HLC theory is supported by a growing number of studies investigating various morphosyntactic structures. They show that age and education level impact L1 speaker performance (see Hulstijn, 2015 for an extensive review; Hulstijn, 2011, 2017, 2019, 2020). The idiosyncrasies tested here would thus fall under HLC.

L2 acquisition studies should take L1 speaker variability into account (e.g. Mulder and Hulstijn, 2011) and provide more background information about their L1 speaker controls who tend to be highly educated participants, thus accentuating differences between L1 speakers and L2 learners (e.g. Dąbrowska, 2019). Future research focusing on language learners in general would benefit from it.

Finally, noticeable differences among L1 speakers across different elicitation tasks and morphosyntactic structures strongly suggest that we need to heed the increasingly loud call to revise our definition of the prototypical L1 speaker. Although few voices would still claim as structuralists Pike (1947) or Nida (1949) did that L1 speakers are infallible and always right, L1 speakers are still idealized and reaching a "native-like" competence is still seen as the goal of L2 learners, setting them up for failure (e.g. Birdsong and Gerken, 2013). The "native speaker's myth" has been dispelled (e.g. Ayoun, 2018) with clear consequences for L2 learners as well as for the debate between competence, performance and prescriptive norms. Future studies could collect information about their participants' attitudes and beliefs regarding their L1 to inform that debate.

Although the difficulties of providing a better definition for an L1 speaker is no easy task and is beyond the scope of the current study, it is a necessary one, particularly from an L2 acquisition perspective (see e.g. Bonfiglio, 2013; Dewaele, Bak and Ortega, 2021; Escudero and Sharwood Smith, 2001; Joseph, 2017).

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Appendix A Corrections to the grammaticality judgment task

stimuli #	corrections	total n
2	Toutes les vieilles gens ont assisté à la messe de minuit	31
	personnes	13
	tous les vieux	1
	tous les vieilles gens	1
	toutes les vieux gens	1
	tous les gens vieux	2
	vieilles personnes	2
	toutes les vieilles personnes	4
	tous les vieux gens	1
	les vieux ou les personnes âgées	1
	tous les	1
	toutes les personnes âgées (“not gens since I don't know its gender”)	1
	assistées	1
	tous les vieux	2
3	Ton phénomène de fille est bien distraite	36

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stimuli #	corrections	total n
	ta	4
	distrain	25
	ta fille est un phénomène, elle est bien distraite	2
	distrain (refers to phénomène, not to fille)	3
	"distrain ou distraite, I accept both"	2
4	L'église résonnait du son des orgues chrétiens	66
	orgues chrétiennes	58
	du son chrétien des orgues	2
	au son	5
	l'église résonnait du son des orgues	1
6	Tous les médicaments, l'aspirine y comprise, sont dangereux	88
	y compris	77
	(aspirine) comprise	6
	l'aspirine comprise/l'aspirine y compris	5
7	Sa grand-mère est le seul ascendant survivant de notre famille	34
	la seule ascendante (survivante)	20
	vivant	1
	descendant	5
	le seul ascendant	1
	la seule descendante (sur)vivante	3
	"I think that both masculine and feminine would be correct"	1
	de sa famille	2
	"I don't know if we can say une ascendante"	1
8	Ma sœur était le pire cancre de la classe	21
	ma soeur était le cancre de la classe	1
	la pire (cancer)	20
9	Ce clown de Jeanne était tordant	40
	tordante	27
	cette clown de Jeanne était tordante	2
	le clown de Jeanne	5
	cette clown de Jeanne	2
	"I think we would find a way to avoid the agreement with the adjective with a different expression like ce clown de Jeanne nous a bien fait rire/ était à se tordre de rire"	3
	ce clown de Jeanne était tordant ou Jeanne était tordante	1
10	Nous avons savouré des délices bretonnes	92

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stimuli #	corrections	total n
	bretons	89
	bretonnes	3
11	J'ai toujours dit que ma femme était un vrai génie	
	une vraie génie	6
12	Mon frère est une bourrique têtue comme pas deux	13
	têtu	7
	mon frère est une bourrique, têtue comme pas deux	5
	mon frère a une tête de bourrique	1
15	Ta saleté de toit a été repeinte une dizaine de fois	54
	c'est le toit qui a été repeint (pas la saleté), ton sale toit ou la saleté du toit a été repeinte	3
	(a été) repeint	50
	la saleté de ton toit a été repeinte	1
17	Sa majesté Louis XIV n'était pas satisfaite des travaux	
	satisfait	14
21	Votre tornade de fils est tout essoufflée	
	tout essoufflé	85
22	Certains gens ne partent jamais en vacances	63
	certaines (gens)	41
	certaines personnes	22
23	Ce bijou de symphonie sera inscrit au répertoire	
	sera inscrite	14
25	Ils se sont encore achetés des CDs	71
	CD	22
	acheté	49
26	Les vieux gens sont soupçonneux de tout et de rien	69
	vieilles	30
	les vieilles gens sont soupçonneuses	20
	les vieilles personnes	5
	les vieils gens sont soupçonneux	1
	les vieux sont soupçonneux	2
	les vieilles gens sont soupçonneux	2
	les vieilles personnes sont soupçonneuses	5
	les personnes âgées sont soupçonneuses	3
	les vieilles gens sont soupçonneux	1

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stimuli #	corrections	total n
27	Ce chef d'œuvre de peinture sera exposé au MOMA exposée	6
29	Voilà les livres. Combien en avez-vous lus? lu	53
30	Tous les journalistes, y comprise Claire Chazal, sont en grève y compris y compris ou Claire Chazal comprise Claire Chazal comprise "y compris is a frozen expression"	89 83 3 1 2
32	Combien de dragées avez-vous mangées? Il n'y en a plus! mangé mangés	43 38 5
34	Une amour si violente ne pouvait pas durer! un amour si violent un amour si violent ou des amours si violentes	108 102 6
35	Son abomination de mari est encore emprisonnée emprisonné son abominable mari est encore emprisonné "emprisonné (refers to husband, not to abomination)"	74 70 3 1
36	Voilà la maison que nous avons faite construire à la campagne fait "both versions fait/e are possible"	67 66 1
37	Cette église abrite un choeur et un orgue magnifiques une orgue des orgues magnifique "I am not sure about the gender of orgue"	15 5 5 4 1
38	Estelle sera toujours un casse-cou, un vrai garçon manqué! une casse-cou "est casse-cou (without an article)"	24 22 2
39	Quand Pâques sera passé et que les vacances seront finies, je serai triste passée passées "I am always unsure about the gender of Pâques"	18 12 4 2

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stimuli #	corrections	total n
43	Etant données les circonstances, on a préféré rester chez nous étant donné	59
44	Son imitation de bijou n'a pas encore été vendue vendu	19
45	Etant donné la situation, les choses ne risquent pas de s'arranger étant donnée	16
46	Passée une certaine heure, tous les magasins sont fermés passé	50
47	Marie ne s'en est pas du tout souvenu souvenue	31
	"souvenu et souvenue are correct depending on what the referent of 'en' is"	2
48	Je n'aime pas la robe que la mariée a faite faire a fait	76
49	La voiture que j'ai fait réparer est encore au garage ai faite (réparer)	23
50	Les marchandises que vous avez fait acheminer sont arrivées faites	12
51	Ces hommes sont toutes des crapules peu recommandables tous	83
52	Combien d'aspirines avez-vous pris? prises aspirine aspirine...pris comprimés d'aspirine cachets d'aspirine ou combien d'aspirine gender of aspirine?	42 29 6 3 2 1 1
53	Pierre postera les lettres que le maire a faites écrire a fait	74
54	Voilà les roses que j'ai fait livrer pour le mariage faites	16
55	Elle a des yeux noisette magnifiques, tu ne trouves pas? noisettes	10
59	Les jeunes filles ne se sont pas rendues compte de leur erreur rendu	45

Appendix B Preference task results by categories (sessions 2 and 3)

N1 de N2 animate	Pref.	G	U	DK
1a. Mon cauchemar de belle-mère sera absent, Dieu merci	41.1%	23.2%	59.6%	17.2%
1b. Mon cauchemar de belle-mère sera absente, Dieu merci	58.9%	14.5%	66.7%	18.8%
3a. Cette catastrophe de gamin s'est débrouillée pour tomber	35.7%	25.0%	61.1%	13.9%
3b. Cette catastrophe de gamin s'est débrouillé pour tomber	64.3%	30.0%	53.3%	16.7%
13a. Ce singe d'actrice n'a pas été retenue pour ce film	56.6%	21.9%	63.0%	15.1%
13b. Ce singe d'actrice n'a pas été retenu pour ce film	43.5%	15.8%	63.2%	21.1%
16a. Cette andouille de Paul s'est perdue en ville	24.4%	21.3%	61.4%	17.3%
16b. Cette andouille de Paul s'est perdu en ville	75.6%	14.6%	70.7%	14.6%
2a. Cette beauté de mannequin est invitée de partout	83.9%	33.3%	48.1%	18.5%
2b. Cette beauté de mannequin est invité de partout	16.1%	31.9%	49.6%	18.4%
N1 de N2 inanimé	Pref.	G	U	DK
5a. Ta cochonnerie de vélo s'est écrasé contre le mur	50.6%	20.5%	62.7%	16.9%
5b. Ta cochonnerie de vélo s'est écrasée contre le mur	49.4%	29.4%	58.8%	11.8%
7a. Ce cauchemar d'aventure sera bientôt terminé	78.0%	13.5%	75.7%	10.8%
7b. Ce cauchemar d'aventure sera bientôt terminée	22.0%	14.5%	69.5%	16.0%
4a. Cet amour de robe a été cousu à la main	47.0%	9.0%	75.3%	15.7%
4b. Cet amour de robe a été cousue à la main	53.0%	12.7%	65.8%	21.5%
14a. Ce rêve de poupée a été vendue aux enchères	45.8%	31.9%	57.1%	11.0%
14b. Ce rêve de poupée a été vendu aux enchères	54.2%	14.3%	58.4%	27.3%
16a. Leur merveille de spectacle sera très applaudi	67.9%	31.3%	50.0%	18.5%
16b. Leur merveille de spectacle sera très applaudie	32.1%	14.0%	67.5%	18.4%
Invariable adjectives	Pref.	G	U	DK
23a. C'est un bel homme avec ses cheveux argent	83.3%	25.0%	50.0%	25.0%
23b. *C'est un bel homme avec ses cheveux argents	16.7%	4.3%	87.1%	8.6%
6a. *Il a fait peindre les murs d'une vilaine couleur pastelle	23.2%	9.3%	82.2%	8.5%
6b. Il a fait peindre les murs d'une vilaine couleur pastel	76.8%	28.2%	61.5%	10.3%
14a. Elle n'hésite pas à porter des jaunes canari ou citron	92.3%	23.1%	61.5%	15.4%
14b. *Elle n'hésite pas à porter des jaunes canaris ou citrons	7.7%	5.8%	85.2%	9.0%
Gens	Pref.	G	U	DK
8a. *Certaines jeunes gens ont choisi de faire grève	13.7%	33.1%	59.3%	7.6%
8b. Certains jeunes gens ont choisi de faire grève	86.3%	39.1%	34.8%	26.1%
18a. Les professeurs ont refusé de rencontrer certains jeunes gens	91.1%	13.3%	66.7%	20.0%

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Gens	Pref.	G	U	DK
18b. *Les professeurs ont refusé de rencontrer certaines jeunes gens	8.9%	29.4%	59.5%	11.1%
15a. *Les jeunes gens qui font du sport sont plus heureuses	4.8%	22.5%	71.9%	5.6%
15b. Les jeunes gens qui font du sport sont plus heureux	95.2%	0.0%	87.5%	12.5%
24a. *De belles jeunes gens ont assisté au défilé de mode	15.5%	22.5%	65.5%	12.0%
24b. De beaux jeunes gens ont assisté au défilé de mode	84.5%	23.1%	57.7%	19.2%
6a. Ces jeunes gens sont heureux d'assister au concert de Beyoncé	95.8%	28.6%	57.1%	14.3%
6b. *Ces jeunes gens sont heureuses d'assister au concert de Beyoncé	4.2%	18.0%	78.9%	3.1%
Causative	Pref.	G	U	DK
9a. Les marchandises que vous avez fait acheminer sont arrivées	72.6%	28.3%	69.6%	2.2%
9b. *Les marchandises que vous avez faites acheminer sont arrivées	27.4%	9.0%	79.5%	11.5%
18a. *Voilà la maison que nous avons faite construire à la campagne	35.7%	4.6%	79.6%	15.7%
18B. Voilà la maison que nous avons fait construire à la campagne	64.3%	43.3%	38.3%	18.3%
22a. *La voiture que j'ai faite réparer est encore au garage	23.8%	7.0%	78.9%	14.1%
22b. La voiture que j'ai fait réparer est encore au garage	76.2%	55.0%	32.5%	12.5%
Epicene	Pref.	G	U	DK
10a. Ma cousine sera le tiers qui signera tous les documents	94.6%	22.2%	44.4%	33.3%
10b. *Ma cousine sera la tiers qui signera tous les documents	5.4%	8.2%	81.8%	10.1%
11a. *Son Excellence voudrait-il se reposer après ce long voyage?	16.1%	25.5%	62.4%	12.1%
11b. Son Excellence voudrait-elle se reposer après ce long voyage?	83.9%	70.4%	18.5%	11.1%
12a. Un homme politique peut être une vermine immonde	97.6%	25.0%	75.0%	0.0%
12b. *Un homme politique peut être un vermine immonde	2.4%	0.0%	97.6%	2.4%
17a. Cette milliardaire était un mécène merveilleux pour les arts	63.1%	50.0%	30.6%	19.4%
17b. *Cette milliardaire était une mécène merveilleuse pour les arts	36.9%	24.5%	47.2%	28.3%
19a. *J'ai consulté une femme merveilleuse, une sage bouddhiste au Tibet	58.9%	33.3%	44.9%	21.7%
19b. J'ai consulté une femme merveilleuse, un sage bouddhiste au Tibet	41.1%	41.4%	36.4%	22.2%
7a. *Votre fille est une prodige au piano, quelle merveille!	36.3%	23.4%	52.3%	24.3%
7b. Votre fille est un prodige au piano, quelle merveille!	63.7%	49.2%	47.5%	3.3%
9a. *Marie est une gourmet qui cuisine aussi à merveille	17.9%	5.1%	78.3%	16.7%
9b. Marie est un gourmet qui cuisine aussi à merveille	82.1%	63.3%	26.7%	10.0%

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Epicene	Pref.	G	U	DK
19a. Ma cousine sera le tiers qui signera tous les documents	94.6%	22.2%	55.6%	22.2%
19b. *Ma cousine sera la tiers qui signera tous les documents	5.4%	10.7%	74.8%	14.5%
Amour	Pref.	G	U	DK
21a. Des amours si belles et romantiques ne se vivent qu'une seule fois!	73.2%	24.4%	57.8%	17.8%
21b. *Des amours si beaux et romantiques ne se vivent qu'une seule fois!	26.8%	29.3%	64.2%	6.5%
22A. Les amours italiennes de cet écrivain ont duré toute sa vie	71.4%	14.6%	64.6%	20.8%
22B. *Les amours italiens de cet écrivain ont duré toute sa vie	28.6%	39.2%	49.2%	11.7%
Past participle	Pref.	G	U	DK
20a. Prenez toutes les boîtes excepté celle-là	67.3%	20.0%	61.8%	18.2%
20b. *Prenez toutes les boîtes exceptée celle-là	32.7%	11.5%	67.3%	21.2%
8a. Passé la date officielle, aucune proposition ne sera acceptée	66.1%	26.3%	59.6%	14.0%
8b. *Passée la date officielle, aucune proposition ne sera acceptée	33.9%	17.1%	69.4%	13.5%
10a. Fermez toutes les valises excepté la noire	76.2%	21.7%	67.4%	10.9%
10b. *Fermez toutes les valises exceptée la noire	27.4%	13.1%	70.5%	16.4%
12a. Vu la manière dont il s'est comporté, je ne lui parlerai pas de sitôt!	88.7%	26.3%	57.9%	15.8%
12b. *Vue la manière dont il s'est comporté, je ne lui parlerai pas de sitôt!	11.3%	4.0%	79.2%	16.8%
20a. *Vues les erreurs qu'il a commises, il ne réussira jamais au concours	13.7%	4.1%	86.2%	9.7%
20b. Vu les erreurs qu'il a commises, il ne réussira jamais au concours	86.3%	13.0%	69.6%	17.4%
Orgue(s), Pâque(s), délice(s)	Pref.	G	U	DK
1a. J'ai admiré beaucoup d'orgues mais je ne savais pas lequel choisir	73.8%	20.5%	63.6%	15.9%
1b. *J'ai admiré beaucoup d'orgues mais je ne savais pas laquelle choisir	26.2%	10.5%	75.0%	14.5%
5a. Les calissons sont des délices aixoises	19.6%	2.2%	74.8%	23.0%
5b. *Les calissons sont des délices aixois	80.4%	24.2%	69.7%	6.1%
23a. Un bon petit rosé frais est toujours un vrai délice	100%			
23b. *Un bon petit rosé frais est toujours une vraie délice	0%	3.6%	93.5%	3.0%
2a. Quand Pâques sera fini, nous reprendrons le travail	91.1%	6.7%	80.0%	13.3%
2b. Quand Pâques seront finies, nous reprendrons le travail	8.9%	18.3%	66.0%	15.7%
3a. La Pâque juive est une des traditions les plus anciennes	96.4%	0.0%	83.3%	16.7%

(Continued)

(Continued.)

Orgue(s), Pâque(s), délice(s)	Pref.	G	U	DK
3b. *Le Pâque juif est une des traditions les plus anciennes	3.6%	0.6%	93.2%	6.2%
4a. Les orgues de Flandres sont connues dans le monde entier	64.3%	10.0%	86.7%	3.3%
4b. *Les orgues de Flandres sont connus dans le monde entier	35.7%	12.0%	82.4%	5.6%
Combien	Pref.	G	U	DK
11A. Ce sont de belles fleurs. Combien en avez-vous achetées?	33.9%	11.7%	75.7%	12.6%
11B. Ce sont de belles fleurs. Combien en avez-vous acheté?	66.1%	8.8%	73.7%	17.5%
13A. Voilà toutes les cartes. Combien en a t-il écrit?	50.6%	20.5%	53.0%	26.5%
13B. Voilà toutes les cartes. Combien en a t-il écrites?	49.4%	3.5%	92.9%	3.5%
15A. J'ai trouvé ces photos. Combien en avez-vous pris vous-même?	48.2%	18.4%	56.3%	25.3%
15B. J'ai trouvé ces photos. Combien en avez-vous prises vous-même?	51.8%	25.9%	71.6%	2.5%
Reflexive verbs	Pref.	G	U	DK
17a. Mes sœurs se sont toujours demandé pourquoi nos parents ont divorcé	70.2%	8.0%	78.0%	14.0%
17b. *Mes sœurs se sont toujours demandées pourquoi nos parents ont divorcé	29.8%	0.8%	88.1%	11.0%
21A. *Ma belle-sœur s'est beaucoup amusé hier soir	12.5%	0.0%	93.2%	6.8%
21B. Ma belle-sœur s'est beaucoup amusée hier soir.	87.5%	0.0%	100%	0.0%
24A. *Les étudiantes se sont mis à courir en riant.	22.0%	0.0%	81.7%	18.3%
24B. Les étudiantes se sont mises à courir en riant	78.0%	21.6%	73.0%	5.4%

Appendix C Results from participants (n = 25) who obtained above 90% for CA on GJT

participant	CA	IR	DK-C	CR	IA	DK-I
1	94.7%	5.3%	0.0%	47.8%	39.1%	13.0%
2	92.1%	7.9%	0.0%	52.2%	47.8%	0.0%
3	92.1%	7.9%	0.0%	52.2%	34.8%	13.0%
4	94.7%	5.3%	0.0%	39.1%	39.1%	21.7%
5	94.7%	5.3%	0.0%	52.2%	47.8%	0.0%
6	97.4%	2.6%	0.0%	21.7%	69.6%	8.7%
7	92.1%	0.0%	7.9%	30.4%	65.2%	4.3%
8	92.1%	7.9%	0.0%	56.5%	26.1%	17.4%
9	92.1%	7.9%	0.0%	73.9%	21.7%	4.3%
10	94.7%	2.6%	2.6%	30.4%	65.2%	4.3%
11	94.7%	5.3%	0.0%	47.8%	52.2%	0.0%
12	92.1%	7.9%	0.0%	39.1%	60.9%	0.0%
13	92.1%	7.9%	0.0%	39.1%	60.9%	0.0%
14	92.1%	5.3%	2.6%	60.9%	30.4%	8.7%
15	97.4%	2.6%	0.0%	34.8%	65.2%	0.0%
16	94.7%	5.3%	0.0%	65.2%	34.8%	0.0%
17	92.1%	7.9%	0.0%	47.8%	52.2%	0.0%
18	92.1%	7.9%	0.0%	43.5%	56.5%	0.0%
19	92.1%	7.9%	0.0%	17.4%	78.3%	4.3%
20	94.7%	5.3%	0.0%	43.5%	56.5%	0.0%
21	94.7%	5.3%	0.0%	56.5%	34.8%	8.7%
22	92.1%	7.9%	0.0%	60.9%	39.1%	0.0%
23	94.7%	5.3%	0.0%	56.6%	43.5%	0.0%
24	92.1%	7.9%	0.0%	47.8%	43.5%	8.7%
25	92.1%	5.3%	2.6%	34.8%	56.5%	8.7%

One-way ANOVA		Sum of Squares	df	Mean Square	F	Sig.	eta-squared
correctly accepted	between groups	261.910	4	65.478	0.983	0.418	0.024
	within groups	10852.018	163	66.577			
	total	11113.928	167				
incorrectly rejected	between groups	157.821	4	39.455	0.742	0.565	0.018
	within Groups	8672.808	163	53.207			
	total	8830.629	167				
don't know correct	between groups	40.849	4	10.212	0.736	0.569	0.018
	within groups	2263.225	163	13.885			
	total	2304.074	167				
incorrectly accepted	between groups	2071.647	4	517.912	1.983	0.100	0.046
	within groups	42578.186	163	261.216			
	total	44649.833	167				
correctly rejected	between groups	2669.242	4	667.311	2.518	0.043	0.058
	within groups	43199.873	163	265.030			
	total	45869.115	167				
don't know incorrect	between groups	66.413	4	16.603	0.495	0.740	0.012
	within groups	5469.188	163	33.553			
	total	5535.602	167				

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