Article

The L2 Acquisition of French Interrogatives: Pragmatic Inferences in Clefted wh-Questions

Emilie Destruel [1,]* and Bryan Donaldson [2]

1   Department of French and Italian, University of Iowa, Iowa City, IA 52242, USA
2   Department of Languages and Applied Linguistics, University of California Santa Cruz, Santa Cruz, CA 95064, USA; badonald@ucsc.edu
*   Correspondence: e-destruel@uiowa.edu

Abstract: The present study aims to elaborate on the understanding of the second language (L2) acquisition of French interrogatives by focusing on clefted (subject) wh-questions, structures that are largely absent in prior L2 literature. Our research question addresses how L2 learners of French understand two specific properties associated with these interrogatives: existence and exhaustivity. Using two rating tasks, we examined whether a total of 48 L2 learners converge towards the native norm for these properties, which occur at the syntax-discourse interface and may therefore be vulnerable to incomplete acquisition, following the Interface Hypothesis. Our findings suggest that L2 learners at the intermediate level acquire an understanding of the existential inference before an understanding of exhaustivity.

1. Introduction

The French interrogative system remains a topic of interest in research on both first (L1) and second (L2) language acquisitions of French (Faure and Palasis 2021; Hamlaoui 2011; Li 2021; Zwanziger 2008). Its complexity is widely recognized and has been identified as a potential challenge for L2 learners (Donaldson 2016; Zwanziger 2008). This is especially true for those learners whose native language has a repertoire of interrogatives less extensive than that of French, such as English, thus limiting the possibilities of direct positive L1 transfer.

The present paper examines the acquisition of a specific type of interrogative by English L2 learners of French, namely clefted (subject) wh-questions. This structure, although commonly used in spoken French, is not widely used in English and has not been extensively studied in existing L2 literatures. The overarching goal of our study is to bridge this empirical gap and to advance studies of syntax-discourse interface in L2 acquisition. By examining whether L2 learners acquire the interpretative properties associated with this clefted interrogative, we aim to test the soundness of the Interface Hypothesis (IH) (Sorace 2011)—a generative proposal that relies on a modular view of language wherein certain structures belong to linguistic modules interacting with formal features (e.g., syntax, morphology), while others belong to interfaces between these modules (e.g., syntax-morphology). Here, we adopt a generative approach because it has the advantage of being grounded in linguistic theory and is based on principled distinctions pertaining to language architecture.

2. Background

2.1. A Complex Interrogative System

The English interrogative system is fairly simple, in that partial interrogatives (i.e., wh-questions where only part of the statement is questioned) are formed overwhelmingly by fronting the wh-word to the beginning of the sentence, as in (1). Questions where the

wh-word remains in-situ, as in (2), do exist, but are rarer. They are echo questions, meaning that they are only felicitous when tied to previous discourse and are uttered when a speaker has misunderstood, misheard, or has encountered unexpected information (Sobin 1990; Glasbergen-Plas et al. 2020).

1. **What** did you buy at the supermarket?　　　*(fronted wh-)*
2. You bought **what** at the supermarket?　　　*(in-situ)*

Comparatively, the French interrogative system is more complex; matrix wh-questions can take multiple forms (see e.g., Gadet 1997), allowing partial questions to be derived via an apparent optional rule. In the interest of space and for the sake of clarity, we will not provide an exhaustive list of all the possible permutations that exist for French interrogatives (but see Gadet (1997), Klein (2012) for a discussion). In cases where the question targets the grammatical object, the wh-element can be moved to the left periphery of the sentence, either being reinforced with *est-ce que* "is it that" or involving an inversion of the subject and the auxiliary, or it can remain in-situ, in its canonical position after the verb. In the case of subject questions, which are the focus of this paper, the wh-element necessarily occurs at the sentence-initial position. The following two variants are available: the *est-ce que* interrogative (3a) and the canonical form (3b).

3.	a.	**Qui**	est-ce qui est	venu à ton	mariage	cet été?	*(est-ce que subject question)*
		Who	is it	that has come to your wedding		this summer	

'Who came to your wedding this summer?

	b.	**Qui** est venu à ton mariage cet été ?	*(canonical subject question)*

Table 1 provides frequencies for these two forms taken from spoken corpus data in various studies. Overall, the data suggest that canonical questions are less frequent than the *est-ce que* form.

Table 1. Frequencies of partial interrogative variants in spoken French.

Study	*Est-ce que/qui*	Canonical
(Pohl 1965)	46.5%	10.3%
(Ashby 1977)	38.8%	38.8%
(Söll 1983)	41.5%	12.9%
(Gadet 1997)	26.8%	22%
(Dewaele 2000)	28.8%	6.8%
(Coveney 2002)	48.4%	15.6% [1]
average	38.5%	17.7%

[1] Adapted from Donaldson (2016, p. 471).

Several studies have also focused on identifying the underpinnings of variation between the different interrogative variants. Generally, studies report that socio-stylistic factors such as register play an important role in such variations: canonical and *est-ce que* questions are very common in everyday speech while questions with inversions (for object questions) are primarily used in formal language or in literary writing (Armstrong 2001; Coveney 1997; Dewaele 2000). Nevertheless, because the latter is considered eloquent, it remains prevalent in the input of L2 learners, especially through textbooks (Etienne and Sax 2009).

Another factor that constrains the interrogative form is the identity of the wh-element. Although *comment* "how" freely admits the inversion of a nominal subject, *pourquoi* "why" does not (Coveney 2002; Grevisse and Goosse 2008). In a corpus of over 1500 elicited wh-questions by 32 L1 children and 22 L1 adults, *que/quoi* questions were, for the majority, found to have the *est-ce que* form, and subjects completely avoided using in-situ questions with *pourquoi* (Hulk and Zuckerman 2000). Although descriptive and anecdotal in nature, these tendencies suggest that each of the wh-words are considered separately by native speakers.

Finally, formal studies note that the two variants in (3) are not freely interchangeable because their answerhood conditions differ (Belletti 2005; Mathieu 2004).

In addition to the variants in (3), another structure that French speakers resort to is a clefted interrogative, as illustrated in (4), for grammatical subjects.

4	C'est	**qui**	qui	est	venu	à	ton	mariage cet été?	*(clefted subject question)*
	It's	**who**	who	has	come		to	your wedding this summer	

Who came to your wedding this summer?'

From a structural and functional perspective, a clefted question is similar to its clefted declarative counterpart (*C'est Julien qui est venu à ton mariage cet été* 'It's Julien who came to your wedding this summer'); it has a complex bi-clausal structure that contains a matrix clause headed by a copula and a relative clause (Lambrecht 2001). The interrogative word occurs at the pivot position of the matrix clause, and the relative clause contains information that is presupposed or, already retrievable from the context.

Functionally, beyond its association with narrow focus (i.e., focus that falls only on one constituent vs. the whole sentence), this clefted question is pragmatically marked and less frequent than the ones in (3) (see e.g., Donaldson 2016). It carries two inferences that are not lexically encoded as part of the assertion, distinguishing (4) from the non-clefted questions in (3).[1]

Firstly, clefted questions convey a presupposition of *existence*. This means that the clefted constituent is not a conventional part of the maximal individual held by the predicate, agreeing with Büring and Kriz (2013). This presupposition is argued to stem from the definite description expressed by the demonstrative-like pronoun 'c'' (Clech-Darbon et al. 1999). When uttering the question in (4), the questioner must assume—or at least pretend—that someone attended the addressee's wedding. Informally, (4) amounts to inquiring about the value of x such that x are the people who attended the addressee's wedding. Clefted questions are therefore specificational in nature. Importantly, (unembedded) presuppositions, especially the presupposition of existence, are taken to be difficult to cancel (Abrusán 2015). Indeed, it is commonly accepted that the existence of presuppositions in clefted declaratives cannot be cancelled simply by reinforcing the presupposed content with an explicit denial (#*It's Julien who came to your wedding this summer, but no one came to your wedding*). So, this inference is quite robust and systematic. One commonly applied diagnosis to assess the presence and strength of this presupposition in clefted questions is to look at the felicity of a negative answer. Boeckx (2000) and Mathieu (2004), among others, note that these questions cannot be appropriately answered by 'nobody' or 'nothing' because this leads to a contradiction. This example (4) requires an answer that is not an empty set. However, the same presupposition is not present (or rather, not as strongly encoded) with other questions; the non-clefted interrogatives in (3a–b) can felicitously be answered through a negative answer, i.e., *personne*.

Second, clefted questions convey an *exhaustivity* inference (Shlonsky 2012). Like declarative clefts, clefted questions convey that the clefted constituent is the only element for which the asserted predication holds. In the literature on questions, it has been common to distinguish between the following two types of questions (Groenendijk and Stokhof 1982, 1984; van Rooij and Schulz 2006; George 2011; Xiang 2016): Mention-All questions and Mention-Some questions. Mention-All questions are those for which the questioner expects that the responder will list *the entirety* of the individuals for whom the predicate holds. Mention-Some questions, on the other hand, can be felicitously answered by mentioning only *some* (a subset) of the relevant individuals (Hamblin 1973; Karttunen 1977).

A clefted question is argued to be felicitous in contexts where the questioner wishes to signal to the responder that (s)he expects an exhaustive answer—thus being a Mention-All question. If the domain for example (4) includes Paul, Ben, David and Julien (and the responder is well-informed and cooperative), then the responder is expected to list all four individuals in order to provide a felicitous answer. This is not the case for *est-ce que* and canonical questions in (3a). In these cases, all of the individuals do not need to be listed, and are therefore Mention-Some questions.

Example (5), from Hamlaoui (2008), further illustrates this point. Although the canonical question (in bold) requests the identification of a set of games, the wh-phrase can be felicitously modified with *par exemple* 'for example', which explicitly indicates that a partial answer is sufficient. A clefted question could not be modified in the same way—(6) is pragmatically odd because the expression *par exemple* is inconsistent with the exhaustive inference.

5. A: et vous, **vous jouez à quoi par exemple**? Dans la cour, puisque là on est devant la cour et que c'est la récréation, vous jouez à quoi?
>   B: à la marelle
>   C: ah ba les filles elles jouaient à la marelle
>   B: et au mouchoir
>   C: et on jouait aux billes. Moi j'ai connu même le jeu avant les billes: les boutons . . . [2]

6. *A: [. . .] **c'est à quoi par exemple que vous jouez?**
>   It is at what by example that you play?
>   *'What games do you play for instance?'*

Thus, the cost of using a more complex syntactic structure (i.e., a clefted question) is counterbalanced by the benefits associated with being able to pose a question specifically adjusted to the contextual requirements.[3]

2.2. Comparing English and French Declarative Clefts

In the English language, clefted questions are ungrammatical or are at least unattested, to the best of our knowledge (e.g., #It's who who came to your wedding?). Yet, clefts exist in the declarative form (*It's John who came to my wedding*) but exhibit some functional differences with their French counterparts. Crucially, *c'est*-clefts are much more frequently used than in English, and can be used in a wider variety of contexts, including to signal all-focus, that is, in contexts where all the information is new (Clech-Darbon et al. 1999).

Semantically, English declarative it-clefts resemble French in that they also convey existence and exhaustivity. Existence is described by Abusch (2002, 2010), who claims that this property is hard to cancel. For instance, *It's Paul who solved the problem* asserts that Paul solved the problem (main content) and presupposes that someone solved it (presupposition), and it is difficult to accept such a sentence in a context that explicitly expresses ignorance about the presupposition, e.g., #*I have no idea whether anyone solved the problem, but if it is John who did, let's ask him to be discreet about it*.

While exhaustivity is conveyed by both English and French declarative clefts (Destruel 2013), Destruel and DeVeaugh-Geiss (2018) found variations in its systematicity across the two languages. Results from a picture-sentence verification task suggested that French speakers were more willing to accept declarative clefts in contexts violating exhaustivity and did so without the processing costs that emerged with English speakers. The authors interpreted these results as suggesting that the exhaustive inference is the initial default interpretation in English if no further context is provided, in contrast with French where the inference seems weaker.

2.3. Perspective from L2 Acquisition

Overall, acquiring French interrogatives implicates the interface of syntax and pragmatics/discourse, an area of grammar that Sorace (2011) has identified as problematic, even for advanced L2 learners, as articulated in the IH. Although the IH acknowledges a limited role for L1 influence (transfer), it proposes instead that difficulties at external interfaces exist *regardless* of the languages involved, because the cognitive costs associated with bilingualism (in general) lead to the variable application of interface rules. Thus, even when the L1 and L2 groups share strategies, whereby positive transfer (of, e.g., pragmatic features) might be expected, the IH predicts that difficulties will occur whenever external modules, such as discourse/pragmatics, are involved, given the cognitive demands required to integrate such types of information.

The French interrogative system poses a challenge to L2 learners, especially to L1 English learners whose native system lacks certain forms that are attested in the L2, such as clefted questions. Although English does have declarative clefts that share certain features with French *c'est*-clefts, Section 2.2 illustrates important differences. What implications does this have for L2 acquisition? In terms of L1 transfer, the unavailability of clefted questions in L1 English suggests that a direct transfer of form and function between the two languages is not unequivocal and is in fact highly unlikely. Although the presence of declarative clefts in L1 grammar makes it possible for learners to transfer certain aspects of their general L1 knowledge of clefts to L2 (e.g., recognition of the bi-clausal structure of the cleft or of the association between clefts and focus), we argue that this may not be sufficient to form a basis for knowledge transfer to French. Indeed, in terms of the learning tasks involved, successful L2 acquisition first necessitates a speaker to recognize that clefted questions are used in French (suppressing any L1 knowledge of ungrammaticality). Secondly, it implies recognizing appropriate mapping between form and function and felicitously inferring the additional layer of pragmatic and discursive meanings beyond the words and syntactic computation of the different interrogative forms. More specifically, learners must recognize the felicity conditions of the clefted forms vis-à-vis alternate interrogative forms, with respect to the two pragmatic inferences conveyed, as clefted question are only felicitous under certain conditions in French.

Previous literature on the L2 acquisition of French questions, has focused mostly on the socio-stylistic appropriateness and accuracy of form-function mapping. Dewaele (2000) reported an overuse of formal variants among L2 learners, a finding common to other studies as well. Sax's (2003) results showed that learners with a more authentic input trended toward native socio-stylistic norms, but without converging on them. Zwanziger (2008) investigated communicative functions and form-function mappings among advanced or near-native speakers; she reported an overuse of interrogatives that were formed using *est-ce que* and found that, even at relatively high levels of proficiency, learners' understanding of the exact pragmatic and discursive functions ascribed to different interrogative forms in French was limited. On the other hand, the near-native speakers in Donaldson's work (2016) demonstrated socio-stylistically appropriate uses of the most common wh-question forms. Unlike the learners in Zwanziger's work (2008), they did not appear to overuse *est-ce que* interrogatives as a pragmatically bleached default form, instead, they associated this structure with the same pragmatic contexts as native speakers. More recently, Li (2021) examined the choice of fronted versus in situ wh-interrogatives in advanced L2 French. Although her L1 English speakers patterned with native French speakers, demonstrating sensitivity to information structure (discourse givenness), her L1 Mandarin speakers differed, exhibiting a preference for wh-fronted and *est-ce que* questions regardless of discourse givenness. Because the proficiency of each group was fairly advanced, Li hypothesized that the different behaviors of the L1 English and L1 Mandarin groups could be due to L1 transfer or the nature of each group's L2 input and contexts of L2 use. Importantly, to the best of our knowledge, no previous studies of L2 French have focused specifically on clefted wh-questions or on the existential or exhaustive inference of interrogatives.

More broadly, however, several studies have examined L2 learners' understanding of the *c'est*-cleft in declaratives. Most of this work concerns information structure and discourse context. Watorek (2004) reported an overextension of *c'est*-clefts in early French interlanguage, an issue that can persist into more advanced levels. On the other hand, several studies suggest that *c'est*-clefts can be fully acquired and used felicitously, at least with concern to information structure. Reichle (2010, 2010) presented near-native learners with felicitous and infelicitous discourse contexts and found that their processing of *c'est*-clefts converged on that of native speakers. Donaldson (2012) reported that near-native speakers produced comparable amounts of *c'est*-clefted declaratives to native speakers in a corpus of spontaneous informal conversation; their judgments regarding the use of the clefts, with respect to focus marking and information structure, were entirely nativelike, in

both experimental and conversational data. Overall, the results of these studies suggest that early acquisitional challenges can in some cases persist until fairly advanced levels, but information on structural properties of declarative *c'est*-clefts are ultimately acquirable.

On the other hand, to our knowledge only one study, that was conducted by Destruel and Donaldson (2017), has investigated learners' acquisition of the exhaustivity inference in L2 French declarative *c'est*-clefts. Their findings suggest that L2 learners initially acquire the *c'est*-cleft as a pragmatically neutral structure, without acquiring its specific discourse-dependent properties. At more advanced levels of proficiency, however, the L2 learners' derivation of the exhaustive inference appeared entirely nativelike. Destruel and Donaldson contended that, although their beginning learners' performance displayed effects consistent with the predictions of the IH, these acquisitional challenges were surmounted at more advanced levels.

To the best of our knowledge, no prior studies have examined the acquisition of French clefted interrogatives, and despite a large literature on L2 pragmatics, we are aware of little work related to the acquisition of the existential presupposition and exhaustive inference of interest here (although see Slabakova (2010); Taguchi et al. (2013), among others, for work on the scalar implicatures, in particular that of quantifier 'some'). Our paper aims to contribute to our understanding of this aspect of L2 knowledge.

3. Experiment 1: Existence Presupposition

The first experiment employed a naturalness rating task that was designed to answer the following research question: Are L2 learners of French sensitive to the presupposition of existence in clefted questions?

3.1. Participants

There were a total of 48 participants in this study, including 24 monolingual native French speakers (11 males, 13 females) who were recruited in Southwestern France. They were either students at a Southwestern university, completing a Master's degree in English studies (n = 19) or young professionals (n = 5). Their ages ranged from 21 to 45. The 24 L2 learners (8 males, 16 females) were all native speakers of English. Their ages ranged from 19 to 24. They were recruited from language classes at a Midwestern university in the United States. They were all either majors (n = 18), which means they had completed at least two years of general education classes in French, or first-year Master students (n = 6) in French. All of them were enrolled in upper-level French classes (i.e., Introduction to Reading and Writing Literature and Topics in French Linguistics) at the time of the study. Only two of them had participated in a study abroad program (summer program), and none of them reported spending time outside of class listening to, reading or watching authentic material on a daily or weekly basis. All of them reported speaking only English at home, with friends and at work.

Before completing the experimental task, all participants completed a short biographical questionnaire conducted online. Moreover, to avoid conflating experience and institutional level with L2 proficiency, all L2 learners were administered the cloze-test developed by Tremblay (2011). In this test, participants are required to fill-in 45 blanks (out of 314 total words) from a nontechnical French newspaper article. Therefore, the maximum score possible was 45/45. Our scoring protocol followed Tremblay's recommendations as well as judgments provided by a native speaker of French. Given our results, we classified learners into two proficiency groups; those who scored between 25 and 35 points—the **intermediate** group (n = 15)—and participants who scored above 35/45—the **advanced** group (n = 9). Thus, our analyses will include the two-level predictor proficiency, based on these groupings. Our lowest score was 25/45 and the highest score was 40/45. We did not have any participants that Tremblay would categorize as having "low" proficiency, i.e., with a score of 25/45 or lower.

3.2. Design

　　　The main task was delivered online via the survey platform Qualtrics. Participants read a series of question-answer pairs and were asked to judge the naturalness of the answer in relation to the context of the question, on a 5-point Likert scale represented by stars, with the end points labeled as "extremely unnatural" (1) and "perfectly natural" (5).

　　　The materials were created by manipulating two factors, the question form and the answer type. The question was presented in either a cleft, as in (7a), or in its canonical counterpart, as in (7b). Given that declarative clefts occur more frequently and are judged to be more natural with grammatical subjects than (in-)direct objects in French (Destruel 2016; Hamlaoui 2009; Katz 1997; Lambrecht 1994), we decided to only focus on such items for clefted questions. Thus, all of our experimental items were questions targeting an animate grammatical subject, i.e., 'Who' questions. As illustrated in example (8), the type of answer to all questions was either the empty set (e.g., *personne* 'no one') or mentioned an individual, which was always provided in the form of a definite noun phrase.

7	a.	C'est	qui	qui a	cuisiné la	tarte aux pommes?	(*Clefted subject question*)
		It's	who	who have	cooked the	pie at-the apples ?	
		'Who baked the apple pie?'					
	b.	Qui	a	cuisiné	la tarte aux pommes?		(*Canonical subject question*)
		Who	have	baked	the pie at-the apples.		
		'Who baked the apple pie?'					

> 8　　La femme/ #Personne.
> 　　'*The woman/#no one.*'

　　　All items were designed with words that would be familiar to the participants, a condition that we ensured by drawing words from the textbooks utilized in the different classes, as well as from a list of 100 of the most common French nouns. We created eight lexicalizations per condition for a total of 32 experimental items, to which we added a total of 32 distractors (1/1 ratio). These distractors included clefted object questions (*C'est quoi que . . .* 'Lit: It's what that . . . ') and fronted *est-ce que* questions (*Qui est-ce qui . . .* , 'What is it that . . . '). A total of 64 items were randomized per participant into 4 experimental lists so that each participant contributed an equal number of responses (i.e., 8) in each cell of the 2 x 2 Latin Square design, although they only encountered one version of each item.

3.3. Predictions

　　　As discussed in Section 2.2, previous research on French and English has shown that clefts carry a presupposition of existence—a non-truth-conditional aspect of meaning that is overlooked when clefts are uttered. This presupposition is argued to be systematic and strong (i.e., difficult to cancel) and is commonly identified by the fact that it is infelicitous to answer a clefted question using the empty set. Crucially, the existential presupposition is absent from canonical (non-clefted) questions.

　　　Given these theoretical assumptions, we make the following predictions. Native French speakers will rate negative answers (e.g., 'no one', 'nothing') poorly following clefted questions but will accept negative answers within-situ questions. In contrast, answers that mention an entity should be rated as natural for both question forms. For L2 learners, although the existential presupposition is present in both English and French clefts, clefted questions of the c'est qui qui type are absent or extremely infrequent in English. The learning task thus involves interpreting this supposedly shared pragmatic property in a novel syntactic context. Because the L2 speakers must derive a pragmatic inference on the basis of discourse information, the IH predicts that their performance will differ from that of the native speakers. We therefore hypothesize that, if the IH is correct, the L1 English learners of French will not derive the existential presupposition in clefted interrogatives, or at least will not do so to the same degree as the native French speakers.

3.4. Results

Firstly, we focus on descriptively reporting the results. Figure 1, which illustrates the average ratings for clefted questions and canonical questions by answer type, shows that the native speakers and the L2 learners pattern similarly.
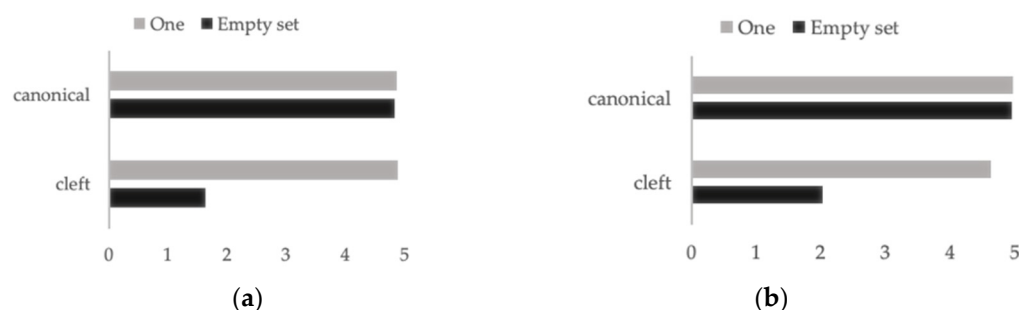

(a)

(b)

Figure 1. Ratings for clefted and canonical questions per answer type; (**a**) French natives ; (**b**) L2 learners.

Canonical questions are rated as completely natural in both contexts, averaging around 4.87 and 4.83 for natives, and 4.97 and 4.96 for learners in the "one" context (where one individual is mentioned as an answer) versus the empty set answer, respectively. On the other hand, both groups evince a degradation for clefts (1.64 for the native speakers, 2.02 for the learners) when answered by a negative answer such as "personne", in line with predictions from the prior literature. Both groups also display the same trend in rating clefted questions as more felicitous in contexts where the answer mentions an individual, at 4.88 for native speakers and 4.64 for L2 learners. Overall, the learners' patterns suggest that they are not judging test items randomly and that they have understood that clefted questions are associated with an existential presupposition in addition to the basic syntax of these questions.

Statistically, we analyzed the data using a mixed-effects linear regression, which predicted question form ratings based on the three fixed effects of interest (language group, answer type and proficiency) and the following random effects structure: random by-participant intercepts, random by-participant slopes for all fixed effects, and random by-item intercepts. The language group predictor was effect coded with values +1 (natives) and −1 (L2 learners), the answer type was effect coded with values +1 (empty set) and −1 (empty set), and finally proficiency was sum-coded with values +1 (advanced), 0 (natives) and −1 (intermediate). All fixed effect predictors were centered before entering the analysis. Results were obtained using the lme4 (Bates et al. 2015) and lmerTest (Kuznetsova et al. 2014) packages in R. The two fixed effect predictors were allowed to interact. We report on the main effects of each factor and their interaction for clefts and canonical questions separately, with any t-value that exceeds |1.96| considered to be statistically significant with $p < 0.05$.

For canonical questions, statistical results displayed no main effect of answer type ($\beta = 0.01$, *SE* = 0.03, $t = 0.49$, $p > 0.05$) or language group ($\beta = 0.032$, *SE* = 0.047, $t = 0.92$, $p > 0.05$), and no significant interaction ($\beta = 0.081$, *SE* = 0.031, t = 0.33, p > 0.05). For clefted questions, the model revealed a main effect of answer types ($\beta = 2.65$, *SE* = 0.06, $t = 37.6$, $p < 0.001$) but not language groups ($\beta = -0.038$, *SE* = 0.005, $t = -1.32$, $p > 0.05$), and no significant interaction was found ($\beta = 0.061$, *SE* = 0.007, $t = 1.54$, $p > 0.05$). Moreover, the predictor proficiency did not play a role for either of the two question forms, as we found that both intermediate and advanced learners performed in accordance with the native norm. Indeed, there was no main effect of proficiency for in situ questions ($\beta = -0.056$, *SE* = 0.10, $t = -0.55$, $p > 0.05$) or for clefted questions ($\beta = 0.0019$, *SE* = 0.002, $t = 0.79$, $p > 0.05$.)

In total, the statistical analysis corroborates the following descriptive findings: (i) the naturalness of clefted questions depends on the type of answer given, although this is not the case for canonical questions (Hamlaoui 2008, but following Hamlaoui 2008), and (ii) L2

learners do not experience difficulties with the acquisition of the existence presupposition. They interpret the French clefted question as presupposing that someone performed the action described, and felicitously reject negative answers.

4. Experiment 2: Exhaustivity Inference

The second experiment tested L2 learners' sensitivity to the second pragmatic feature associated with clefted questions, exhaustivity. Specifically, we tested whether the participants recognized that clefted questions carry the expectation of an exhaustive response.

4.1. Participants

The same 48 participants from experiment 1 completed experiment 2 (within-subject design). Experiment 2 was completed within 72 h of experiment 1.

4.2. Design and Procedure

This experiment, also conducted via the website Qualtrics, employed a sentence-picture task for which naturalness ratings were collected. Before beginning the experiment, participants read a passage that was meant to contextualize the experimental items. The passage appeared at the center of the screen and read: "Your friends Ann and Sarah are the hosts of a TV show. On this show, various people perform certain tasks and activities. Last week, Sarah was sick and couldn't host. As a result, Ann was a bit overwhelmed when she was hosting alone, and although she was able to pay close attention during some of the episodes, she was quite distracted on some of the others. Today, Sarah calls Ann to ask her what happened on each episode she missed."

Following this passage, participants read a set of instructions on the next slide, which explained that they would see pictures from each episode depicting the different activities that the contestants actually performed. Instructions further explained that underneath each picture, participants would read Ann's answer to a question from Sarah regarding who had performed a certain activity. Based on the picture and Ann's answer, they would have to rate how natural Sarah's question was on a 5-point Likert scale represented by stars, with the end points being labeled as "extremely unnatural" (1) and "completely natural" (5).

Figure 2 provides an illustration of a test item, and includes the three elements of the experiment being manipulated (see Section 4.3 for manipulations): The picture, Ann's answer and Sarah's question.

Ann's answer is: "Paul, Bob et Matt"

Sarah's question was: "C'est qui qui a préparé le pain?" ★★★★★

Figure 2. Sample test item, including the picture, Ann's answer and Sarah's question, to be rated.

To summarize, for each trial, participants saw a picture at the top of the screen under which Ann's answer appeared (presented as "Ann's answer is: [. . .]") followed by Sarah's question which they would then rate (presented as "Sarah's question was: [. . .]"). The task for our participants was to rate the naturalness of Sarah's question given this context.

4.3. Materials

Three factors were manipulated to create the experimental items. First, the type of picture selected was either exhaustive or non-exhaustive. In the *exhaustive* condition, only one character performs the action described in Sarah's question. This condition constituted our control condition (exhaustivity is entailed, given that only one distinct character is performing the described action). For the main condition of interest, which was the *non-exhaustive* picture condition, only three of the four characters perform the described action, so that exhaustivity is not supported. This allows either Mention-All or Mention-Some responses. Figure 3 illustrate these conditions, which correspond with the two picture conditions for the lexicalization "boy eating ice cream."
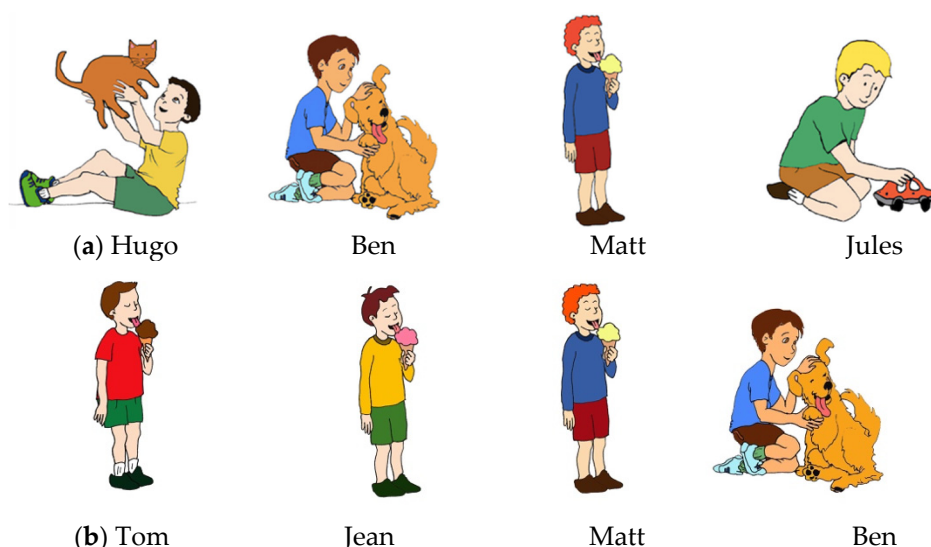

| (**a**) Hugo | Ben | Matt | Jules |

| (**b**) Tom | Jean | Matt | Ben |

Figure 3. Pictorial stimuli: (**a**) exhaustive condition; (**b**) non-exhaustive condition.

In the exhaustive picture (Figure 3a), only one character, Matt, is eating ice cream, while three of the characters in the non-exhaustive condition (Figure 3b) are eating ice cream. When Ann answers the question 'Who ate ice cream?', she can choose to mention some (non-exhaustive) or all (exhaustive) relevant individuals in condition (b), but she can only respond with the exhaustive mention (i.e., Matt) in condition (a).

An artist was hired to draw the pictures used in this experiment. Every picture was designed by this artist to facilitate easier processing of the visual scene by including four characters of similar shape and size. The name of each character appeared underneath the picture. The position of the character(s) who performed the action was always counter-balanced across all four positions, such that the target character(s) was (were) not always in the same place but alternated across the four positions on the picture.

The second manipulated factor was the type of answer given by Ann, either Mention-All or Mention-Some. In other words, in her answer, Ann identified either (a) all the characters who performed the action or (b) only some of the characters who performed the action. To minimize syntactic priming, the response was always presented with minimal syntactic material: the response consisted of only the name or names of the relevant characters (e.g., Matt; Tom and Matt; or Tom, Jean, and Matt). Note that it is impossible to have a condition where the picture is exhaustive and the answer is Mention-Some; this condition is therefore not present in our design, which will consequently not be perfectly crossed. We return to this point later.

The third and last factor that we manipulated was the type of question asked by Sarah (clefted or canonical). The wording of the wh-question was carefully controlled; as was the case in experiment 1, only subject questions were used.

We created 8 lexicalizations per condition. Due to the absence of one of the conditions (see above), there were a total of 6 conditions, for a total of 48 items rather than an exact

$2 \times 2 \times 2$ design. The items were randomized with 32 distractors (2/3 ratio), for a total of 80 stimuli, into eight experimental lists. Distractors included questions related to the pictorial scene and were always presented in the fronted *est-ce que* question.

4.4. Predictions

Previous research on the French c'est-cleft has shown that it carries an exhaustive inference. Although present, this inference can be cancelled in declarative clefts when faced with incompatible discourse information (Destruel and DeVeaugh-Geiss 2018), in contrast with the existence presupposition that is much more robust and difficult to remove. Given these observations, we predict that French native speakers will prefer the clefted question with responses that contain an exhaustive mention, but they will not reject clefted questions with non-exhaustive answers as strongly as they rejected the empty set response with clefted questions in Task 1. In other words, we predict that native French speakers will rate clefted questions as at least somewhat degraded in contexts where several characters are depicted as performing the same action but only some are mentioned as doing so (Non-exhaustive picture, Mention-Some answer condition). On the contrary, clefted questions should be rated as completely natural when the TV host has mentioned all of the characters (Non-exhaustive picture, Mention-All answer condition). In the control condition, where the picture includes only one character performing the target action and the TV host mentions this character in her answer, clefts should be rated as completely natural. Canonical questions, which do not (necessarily) require the exhaustive inference, should be fully accepted with both exhaustive and non-exhaustive responses.

For L2 learners, because deriving the exhaustive inference of c'est-clefted questions depends on integrating discourse-pragmatic and syntactic information, the IH predicts that their performance will differ from that of native speakers. We therefore hypothesize that the learners will not display a nativelike preference for exhaustive responses with clefted questions and that their response preferences will not differ, with respect to the exhaustive inference, between clefted and canonical questions.

4.5. Results

We analyzed the data using a mixed-effects linear regression. This analysis predicted the naturalness ratings of the two question forms (canonical vs. clefted) from the three fixed effects of interest, i.e., language group, picture type and answer type. As in experiment 1, the language group predictor was effect coded with values +1 (Natives) and -1 (L2 learners), and proficiency (based on the groupings that resulted from Tremblay's cloze test) was sum-coded with values +1 (advanced), 0 (natives) and -1 (intermediate). The picture type was effect coded with values +1 (exhaustive) and -1 (non-exhaustive), The following random effects structure was implemented: random by-participant intercepts, random by-participant slopes for all fixed effects, and random by-item intercepts. All fixed effects predictors were centered before they entered the analysis. Results were obtained using the lme4 (Bates et al. 2015) and lmerTest packages in R. The fixed effect predictors were allowed to interact. We report on the main effects of each factor and their interaction for clefts and in-situ questions separately, with any t-value exceeding $|1.96|$ considered statistically significant ($p < 0.05$).

We first report the average ratings for clefted versus canonical questions, for the exhaustive and non-exhaustive picture conditions. Figure 4 illustrates these results.

Overall, the results reveal similar trends in the native speakers and the learners. Firstly, canonical questions were rated similarly in both pictorial contexts, regardless of the group. Native speakers and learners rated these questions as natural in contexts where either only one character or several characters perform the target action. Accordingly, we found no main effect of either language group ($\beta = 0.013$, *SE* = 0.032, *t* = 0.4, *p* > 0.05) or picture type ($\beta = 0.046$, *SE* = 0.059, *t* = 0.77, *p* > 0.05), and no interaction between them ($\beta = 0.008$, *SE* = 0.039, *t* = 0.21, *p* > 0.05).

Next, clefted questions were also rated highly in the exhaustive picture context (i.e., the control condition), which suggests that L2 learners were attentive to the task. Nevertheless, we observe a difference between native speakers and learners when clefted questions occur in the non-exhaustive picture context. Overall, native speakers rate clefted questions as less natural ($\mu = 3.1$) than the L2 learners ($\mu = 4.4$). Statistical analyses corroborate these observations for clefted questions. We found a main effect of picture type ($\beta = -1.46$, $SE = 0.17$, $t = -8.54$, $p < 0.001$) but no main effect of language group ($\beta = 0.11$, $SE = 0.12$, $t = 0.98$, $p > 0.05$), and a significant interaction between the two predictors ($\beta = -0.42$, $SE = 0.15$, $t = -2.78$, $p < 0.001$).
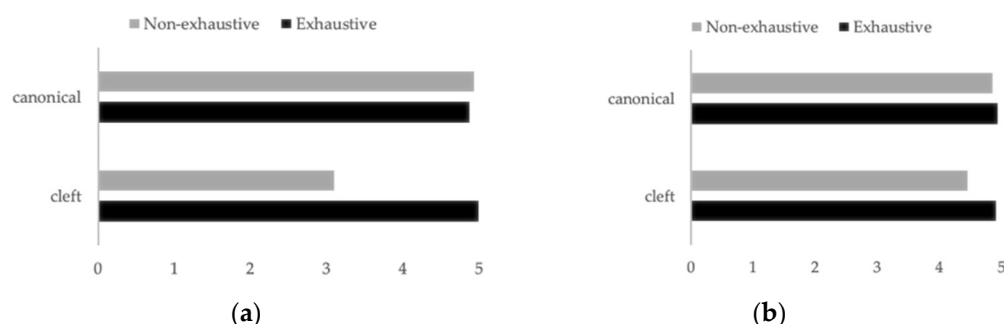

Figure 4. Average ratings for clefted and canonical questions per picture type. (**a**) Native speakers; (**b**) L2 learners.

To further understand the underlying factors in this difference, we focused on the non-exhaustive picture condition, specifically examining the results by answer type (Mention-Some vs. Mention-All). Figure 5 details these results.
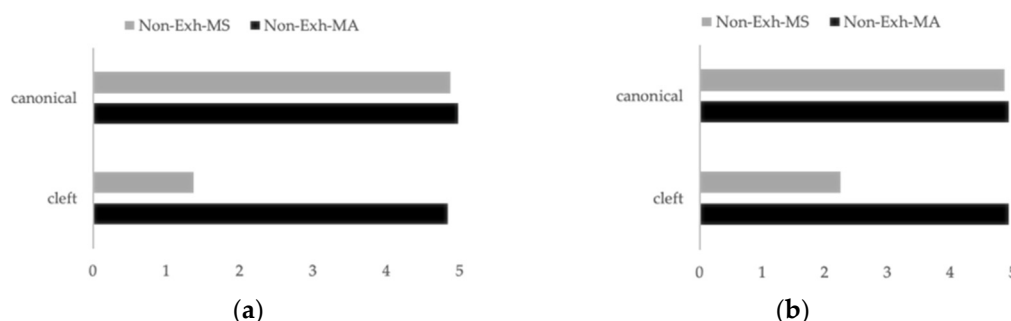

Figure 5. Average ratings for clefted and in-situ questions in the non-exhaustive picture condition, per Answer type: (**a**) Native speakers; (**b**) L2 learners.

Again, in-situ questions are rated similarly in both language groups, but we note a difference for clefted questions. When the answer mentions only some of the characters that perform the action (i.e., Mention-some Answer type), the native speakers' ratings are lower than the L2 learners' ($\mu = 2.24$ versus 1.36, respectively). No such difference exists in the Mention-all condition. This suggests that L2 learners are generally sensitive to the exhaustive requirement for clefted questions, but that they do not perform to the level of the native norm. Statistical analyses corroborate this observation. We find a main effect of Answer type ($\beta = -2.19$, $SE = 0.12$, $t = -16.92$, $p < 0.001$), no effect of language group ($\beta = 0.35$, $SE = 0.065$, $t = 5.42$, $p > 0.05$), and a significant interaction between the two predictors ($\beta = 0.013$, $SE = 0.032$, $t = 0.4$, $p > 0.05$).

Given this interaction, we examine whether this difference derives from levels of proficiency. A visual inspection of Figure 6 suggests that proficiency plays a role. Intermediate learners do not rate clefted questions as poorly with Mention-Some answers as native speakers do, and advanced learners perform on par with native speakers.

The statistical analysis once again supports our descriptive results. We found no main effect of both individual predictor answer types ($\beta = 1.23$, $SE = 0.255$, $t = 4.94$, $p > 0.05$) and proficiency ($\beta = 0.03$, $SE = 0.003$, $t = 8.28$, $p > 0.05$), but a significant interaction between these two predictors ($\beta = -0.10$, $SE = 0.005$, $t = -18.58$, $p < 0.001$).
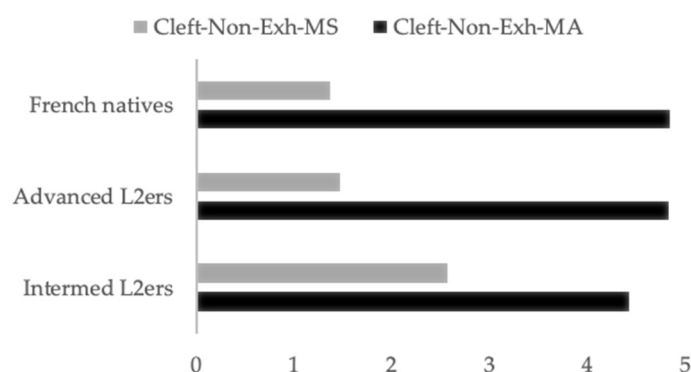

Figure 6. Average ratings for clefted questions in the non-exhaustive picture condition, per answer type and proficiency.

5. Discussion

Our experiments were motivated by the observation that the French interrogative system poses challenges for L2 acquisition given the wider array of structural possibilities it allows, including options that are ungrammatical in L1 English. Thus, the possibility of positive L1 transfer is limited. One such structure is a clefted question—a structure attested but less commonly studied in the French literature. Our paper focused on the L2 acquisition of the pragmatic inferences conveyed by this clefted question, namely existence and exhaustivity. We aimed to test the validity of the IH, which predicts residual difficulties even at advanced levels for phenomena involving external interfaces.

We begin our discussion by briefly summarizing our results. In experiment 1, we found that French native speakers and L2 learners, regardless of their proficiency level, all rejected negative answers (e.g., *personne* 'nobody') with clefted questions, presumably because clefts carry a strong existential presupposition, which is inherently incompatible with a negative answer. Following a clefted question, learners appropriately accepted answers that mentioned an individual. Similarly, their responses to canonical questions, which lack the existential presupposition, were felicitous. These findings confirm an observation previously made in the literature on French (Hamlaoui 2008) experimentally, and they provide primary data regarding the L2 acquisition of robust inferences.

In experiment 2, the overall finding is that L2 learners pattern close to the native norm, and modulo an advanced proficiency level. In the condition where exhaustivity is violated (non-exhaustive picture) and Ann's answer exhaustively identified all the characters performing the action in question, the L2 learners' patterns converged towards the French native norm. In the condition where exhaustivity is violated (non-exhaustive picture) and Ann's answer identified only some of the characters performing the action described, L2 learners' patterns did not resemble those displayed by the French natives. Nevertheless, we found proficiency modulated these results, revealing a developmental sequence. The inferential patterns of the intermediate learners differed from those of the French natives; these learners appeared to interpret clefted questions without reference to or awareness of their discourse-pragmatic properties. That is, in the grammar of the intermediate learners, the *c'est*-clefted question appears as a pragmatically neutral structure. Advanced learners, on the other hand, performed on par with French native speakers in all conditions.

What do these results tell us about L2 acquisition of complex interrogative structures and their non-truth-conditional inferences? They suggest that subtle interpretive properties of an infrequent and pragmatically marked French interrogative structure, i.e., properties

that require the integration of syntax and discourse context, can be fully acquired at sufficiently advanced levels of L2 proficiency. In addition to successfully acquiring the syntactic properties of a French interrogative variant that has no obvious structural correlation in their L1 English, the learners produced judgments about the conditions of use of clefted interrogatives that suggests that they have acquired both the existential presupposition (experiment 1) and the exhaustive inference (experiment 2) associated with it.

Such findings run counter to the predictions of the IH (Sorace 2011), which predicts residual difficulties (under specification and optionality) for phenomena for which the felicitous use involves an external interface, such as the integration of syntactic and discourse-pragmatic knowledge. In experiment 2, these types of effects are found in intermediate learners, for whom the *c'est*-cleft appears to be pragmatically neutral, devoid of the pragmatically derived exhaustive inference, either because they have no representation of this particular pragmatic property or because the cognitive demands of integrating syntactic and discourse-pragmatic information are overly taxing (IH; Sorace 2011, p. 14). However, the results of the advanced learners, who pattern with the native speakers, indicate that the difficulties suggested by the intermediate learners' performance are ultimately surmountable, contrary to the predictions of the IH.

With respect to learner grammars, one possibility is that the learners' representations are nativelike with respect to the existential presupposition and the exhaustivity inference, but that cognitive demands prove too costly to integrate these representations with syntactic structure until they reach advanced levels of proficiency, instead forcing learners to resort to a resource-efficient pragmatically neutral default interpretation. Such a scenario would be compatible with the IH and may explain the proficiency effects observed in experiment 2, although this explanation fails to account for why the exhaustive inference proves more difficult for intermediate learners than the existential presupposition. An alternate possibility is that learners acquire syntactic structure before its related pragmatic attributes (e.g., Bardovi-Harlig 2003; Rothman 2009). If so, we assume that, when *c'est*-clefts first enter L2 grammar (first in declarative contexts and then later in interrogatives), they are simply devoid of their pragmatic correlates, which would be acquired subsequently. Such a situation would account for the intermediate learners' differential performance for the existential presupposition (experiment 1) and the exhaustive inference (experiment 2). We contend that L2 learners acquired the existence presupposition earlier, at a lower level of proficiency, than the exhaustive inference because the existence presupposition is more robust than the exhaustive inference. Whereas presupposition is attested as difficult to cancel, prior work shows that French declarative *c'est*-clefts are not as exhaustive as their English counterpart (Destruel and DeVeaugh-Geiss 2018). In terms of acquisition, this suggests that the exhaustive inference carried by them is easier to cancel, less unambiguous, and therefore presumably less straightforward for L2 grammar to represent.

We argue against the possibility of direct positive L1 transfer, given the absence of an interrogative structure analogous to *c'est qui qui?* in English. Although, English does possess it-clefts in declaratives, which could facilitate transfer of relevant pragmatic properties into L2. Taken together with the results from Destruel and Donaldson (2017), these results suggest that the interpretive properties of declarative *c'est*-clefts (specifically, the exhaustive inference) are acquired at a slightly earlier stage of acquisition than the interpretive properties of *c'est*-clefted interrogatives. Two observations lend credence to this claim. First, declaratives are a more basic and are a less-marked clause type than interrogatives, even in their clefted forms. Secondly, and relatedly, in the input that learners are exposed to, declarative *c'est*-clefts vastly outnumber clefted interrogatives (by a factor of around 30 to 1, according to the corpus data in Donaldson (2012, 2016)). Accordingly, positive L1 transfer could play a part in the early acquisition of the syntax of declarative *c'est*-clefts. Subsequently, although L1 transfer could help learners to acquire the notion of exhaustivity in French, the strength of the inference is different in French and in English, and a straightforward L1 transfer account fails to predict the nativelike response patterns among the advanced learners. In other words, the learners not only understood

the existential presupposition and the exhaustive inference, but their response patterns demonstrated that their preference strengths were akin to those of native speakers.

We take these results as evidence that subtle discourse-pragmatic dependent interpretive properties of a relatively rare French interrogative word order are fully acquirable by L2 learners, contrary to the predictions of the IH.

6. Conclusions

This paper reports two experiments investigating how L2 learners of French understand two pragmatically derived properties of *c'est*-clefted interrogatives: the existential presupposition and the exhaustive inference. All learners, regardless of their proficiency level, demonstrated nativelike understanding of the existential presupposition. For the exhaustive inference, although intermediate learners did not appear to recognize the inference, advanced learners performed on par with the native speaker controls. We conclude that this external interface of discourse-pragmatic and syntactic information does not pose an insurmountable learning challenge for L2 acquisition.

Notes

[1] Similar properties have been identified in clefted questions in other languages, notably in Swedish (Brandtler 2019) and Norwegian (Hauge 2018).

[2] Translation of (5): A: What kind of games did you play for instance? On the playground, as we are in front of the playground and it is recess, what kind of games did you play?; B: Hopscotch.; C: The girls played hopscotch.; B: And a game called "handkerchief"; C: And we played marbles. I even knew the game that preceded marbles: a game called "buttons" . . .

[3] Additional properties of clefted interrogatives are discussed in several studies (see Hamlaoui 2008; Rowlett 2007; Tailleur 2013, among others).

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