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Linking French *wh*-in-situ and context: a choice function analysis

Abstract: French *wh*-in-situ questions may be infelicitous when a quantifier or focus expression precedes the in-situ *wh*-phrase ('intervention effects'). However, these intervention effects are absent in a certain type of context. This paper offers an account of French *wh*-in-situ questions that explains the role of context. We propose that French *wh*-phrases can be interpreted in-situ by means of a contextually bound choice function. We further hypothesise that, due to an ongoing process of language change, there are two groups of French speakers. Both groups can interpret *wh*-in-situ via the choice function but one group may additionally use covert movement. We show how the choice function account along with this 'Two speaker groups hypothesis' accounts for the effect of context on intervention effects, as well as several other longstanding debates regarding the semantics and prosody of French *wh*-in-situ questions.

1 Introduction

French has multiple ways to form a *wh*-question, one of which is *wh*-in-situ, exemplified in (1a). This strategy exists alongside several types of *wh*-fronted questions, such as (1b). While the *wh*-phrase is moved to the left edge of the sentence in *wh*-fronted questions, it appears to be left 'in-situ' in *wh*-in-situ questions, at the same position as the corresponding element in a declarative (1c). *Wh*-in-situ questions are

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typically used in colloquial French; see, among many others, Coveney (1989a, b), Adli (2006) and Rowlett (2007).

(1) a. *Elle   veut   vendre   ces   bibelots à   qui ?*
         she   wants   sell   these trinkets to who
         'To whom does she want to sell these trinkets?'
     b. *À   qui   veut-elle   vendre   ces   bibelots ?*
         To   who   wants-she   sell   these trinkets
         'To whom does she want to sell these trinkets?'
     c. *Elle   veut   vendre   ces   bibelots à   son   ami.*
         she   wants   sell   these trinkets to her   friend
         'She wants to sell these trinkets to her friend.'
         ((1a,b) adapted from Obenauer 1976: 7, (15a, 16a))

The property of French *wh*-in-situ questions that is central to this paper concerns 'intervention effects', exemplified in (2a) versus (2b).[1] The term 'intervention effects' refers to the phenomenon whereby *wh*-in-situ is infelicitous when the *wh*-phrase is preceded by a so-called 'intervener', such as *personne* 'no one' in (2a) (Beck 1996; Bošković 1998, 2000; Chang 1997; Mathieu 1999; cf. Obenauer 1976). *Wh*-fronting, as in (2b), is not blocked by such an expression. The 'interveners', the expressions that induce intervention effects, include quantificational expressions, focus expressions and negation. (Throughout the paper, interveners will be indicated by underlining.)

(2) a. # <u>*Personne*</u>   *n'*   *admire*   **qui** ?
         no.one   NE   admires   who
         (adapted from Chang 1997: 20, (40d))
     b. **Qui**   *est-ce   que   <u>personne</u>   n'   admire ?*
         what   is-it   that no.one   NE   admires
         'Who does nobody admire?'
         (adapted from Chang 1997: 65, (38d))

Intervention effects are commonly assumed to arise when an intervening expression blocks the *wh*-phrase from moving covertly to the left periphery of the sentence, as visualised in (3) (Beck 1996; Bošković 2000; Starke 2001 for French, among others).

(3)   [$_{CP}$ ... intervener ... *wh*-phrase]

         covert

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1 The # sign in (2a) indicates that the sentence is grammatical under an echo interpretation.

(3) indicates that the *wh*-phrase *quoi* 'what' in (2a) cannot undergo covert movement due to the presence of the intervener *personne* 'no one' (see Beck 1996; Guerzoni 2006; Kotek 2018, among others). In the grammatical (2b), on the other hand, the *wh*-phrase moves overtly to Spec CP, showing that overt *wh*-movement is not sensitive to interveners.

Nevertheless, a French *wh*-in-situ question containing an intervener may become acceptable when placed in a certain type of context (Baunaz 2005, 2011, 2016; Beyssade 2006; Engdahl 2006; Starke 2001). This is illustrated with the intervener *tous les N* 'all the *N*' in (4) as compared to (4'), where the *wh*-in-situ question is placed under a context.

(4)   # <u>*Tous les témoins*</u>   ont   reconnu   qui ? (without context)
        all   the   witnesses have   recognized who
        'Whom did all the witnesses recognize?'

(4')   During a trial, witnesses and defendants are confronted.
        One of the defendants has been accused unanimously. The journalist asks:
        Et <u>*tous les témoins*</u> ont reconnu qui ?
        (Baunaz 2016: 157, (40b))

Baunaz (2005, 2011, 2016), building on Starke (2001), suggests that this effect of context on intervention effects stems from an interaction between the feature compositions of the intervener and the *wh*-phrase that crosses it in covert movement. The features represent semantico-pragmatic meanings relating to the kind of context in which a *wh*-phrase may be used.

Our proposal takes Starke's and Baunaz's insights regarding the type of context that voids intervention effects as a starting point yet takes a different approach. We propose that there exists a mechanism to interpret the *wh*-phrase in-situ without covert movement; hence, the intervention effects configuration in (3) does not arise. Nonetheless, this mechanism is only available in a certain type of context. Our proposal thus explains the effect of context on intervention effects in a manner that relates it to the absence of (covert) *wh*-movement. We further hypothesise that covert movement is not available to all speakers of French, while the other mechanism is, leading to what we will call the 'Two speaker groups hypothesis'.

More specifically, we argue that French *wh*-in-situ questions can be resolved via a contextually licensed choice function (cf. Kratzer 1998 for specific indefinites), which allows a *wh*-phrase to be interpreted in-situ yet imposes restrictions on the context. These restrictions are due to a recoverability condition: the referent selected by the choice function must be recoverable for the interlocutor. The analysis accounts for the absence of intervention effects in certain contexts, because when the choice function is used instead of covert movement, the intervention effects configuration in (3) does not arise. A range of further data are also explained by this account, such as the so-called

'extra-strong presupposition' (Chang 1997; Coveney 1989a, b), and differences between interveners (Baunaz 2011) and among speakers (Adli 2006; Bošković 2000) regarding intervention effects, as well as data variation concerning the presence of a large sentence-final rise in prosody (Adli 2006; Cheng and Rooryck 2000).

The paper is structured as follows. Section 2 presents the generalisation, which motivates the analysis, the 'Intervention effects avoidance generalisation', according to which intervention effects are voided when the referent for the *wh*-phrase has already been established in the context. This section is partly based on re-interpreted insights from Starke (2001) and Baunaz (2005, 2011, 2016). Section 3 introduces the contextually bound choice function, which is subject to a recoverability condition according to which the referent for the *wh*-phrase must be recoverable in the context. Together, Sections 2 and 3 explain the relation between context and the absence of intervention effects. Section 4 then shows that the choice function analysis also sheds light on (a) the origin of the so-called 'extra-strong presupposition' and that it accounts for (b) differences between interveners and (c) among speakers regarding intervention effects. Section 5 introduces the 'Two speaker groups hypothesis'. It shows how the choice function analysis in combination with this hypothesis accounts for two further areas of data variation: (d) variation regarding the 'extra-strong presupposition' and (e) the presence of a large final rise in prosody. This section also lays out what the 'Two speaker groups hypothesis' predicts regarding intervention effects. Finally, Section 6 compares the proposal to Baunaz (2005, 2011, 2016), which built on Starke (2001). It also discusses some implications of the proposal, including the possibility of an (ongoing) language change.

2 Lack of intervention effects in relation to context: a generalisation

As shown by Starke (2001), Engdahl (2006) and in particular Baunaz (2005, 2011, 2016), intervention effects are voided when a *wh*-in-situ question containing an intervener occurs in a particular type of context. Let us first return to the example in (4′), repeated in (5):

(5)　　During a trial, witnesses and defendants are confronted. One of the
　　　　defendants has been accused unanimously. The journalist asks:
　　　　Et *tous les témoins* ont reconnu qui ?
　　　　(Baunaz 2016: 157, (40b))

As Baunaz (2005, 2011, 2016) describes it, the *wh*-phrase *qui* 'who' is felicitous in this context because it is already known that there is a specific defendant who has been accused (i.e. recognized) by all the witnesses. The answer to the question makes

reference to a particular individual that the journalist has in mind. The journalist merely asks for the identity of this already familiar individual. Starke (2001) and Baunaz (2005, 2011, 2016) assume that a *wh*-phrase that is felicitous in a context as in (5) has the feature 'specific'.[2]

Note, however, that ordinary specific indefinites, that is, non-interrogative specific indefinites, are felicitous without the type of context that is necessary to license *wh*-in-situ in (5), as is shown in (6).

(6)   Oh, I wanted to tell you. Yesterday a certain/this/some man called and asked me a favour.

Thus, the contextual restrictions do not follow from the *wh*-phrase being treated as a specific indefinite. Rather, if a *wh*-phrase can felicitously be used in combination with an intervener, it needs to be co-referential with a specific, contextually introduced individual. In the case of (5), this is the defendant that has been unanimously accused.

The relevant property of the context in (5) is thus that it specifies a unique referent for the *wh*-phrase, namely a defendant who has been recognised by all the witnesses. Any congruent answer to the *wh*-in-situ question refers to this referent. To see this, suppose that the accused defendant in (5) is defendant number 1, who is called monsieur Bisset, and that he is sitting on the left. In that case, possible answers to the question in (5) could be that all the witnesses recognized defendant number 1, that they all recognized monsieur Bisset, or that they all recognized the defendant on the left. The definite descriptions 'defendant number 1', 'monsieur Bisset' and 'the defendant on the left' would all refer to the same referent, which is the defendant who has been unanimously accused. As a result, the *wh*-in-situ question in (5) becomes very close to the English paraphrase in (7). We will refer to this type of questions, which intend to identify a previously introduced referent, as 'identity questions' (cf. Rothstein 2001).

(7)   The defendant who has been recognized by all the witnesses – who is it?

In other words, we suggest that a context that voids intervention effects makes information salient that allows for unique identification of a referent for the *wh*-phrase. This means that any answer to the *wh*-in-situ question refers to the same referent, the one already specified by the context.[3]

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2 See Section 6.1 for more detailed discussion of Baunaz's analysis and how it compares to the analysis proposed here.

3 A reviewer wondered whether the type of interpretation described here could be analogous to the one found for a fronted *wh*-phrase without *est-ce que* (see (1b) above). As argued by Faure and Palasis (2021), these questions have an 'exclusivity reading': at least one referent (i.e. a possible alternative) is excluded as a felicitous answer. Such a reading is nevertheless much weaker than the one found for *wh*-in-situ questions containing an intervener, where the referent of the *wh*-phrase is fixed by the context.

In order to understand what it takes for a context to uniquely establish such a referent, we discuss two examples in which the context does *not* establish such a referent and does *not* void intervention effects, the first of which is (8).

(8)   Tom is the family globe trotter. He travelled all around the world for more than 20 years. During a family supper, his curious niece presents him a map of the world, with a list of names of all the countries in the world. She asks him:
??Tonton   Tom,   t'   es   <u>pas</u>   allé   où ?
 uncle   Tom   you   are   not   gone   where
Intended: 'Uncle Tom, where didn't you go?'
(Baunaz 2016: 155, (36a))

While the context in (5) above makes salient a specific defendant who has been accused by all the witnesses, the context in (8) does not introduce specific places that Uncle Tom did not visit. What the context makes salient is that Uncle Tom visited many places all over the world, but the intervener *pas* 'not' does not feature in the context. Consequently, there is no referent in the preceding discourse corresponding to 'the places where Uncle Tom did not go'. Accordingly, the question in (8) cannot be paraphrased by the identity question in (9).

(9)   The places where you did not go – what are they?

This example illustrates that the intervener must be included in what the context makes salient (cf. Beyssade 2006; Engdahl 2006).
    A second example in which the context does not identify a unique referent and does not yield intervention effect cancellation is shown in (10).

(10)   During the end-of-year party, various prizes were awarded to the best students: maths, English, French, physics, etc. This year, all the students got a prize. After the party, the dean's husband asks his wife:
<u>Tous les étudiants</u>   ont   reçu   quoi   /   quel   prix ?
 all   the   students   have   received   what   which   prize
Intended: 'What/which prize did all the students receive?'
(adapted from Baunaz 2016: 156,(39b))

Although the context in (10) mentions the intervener *tous les étudiants* 'all the students', the *wh*-in-situ question is not acceptable on the relevant scope reading. The problem seems to be the scope configuration. The context mentions a set of prizes (maths, English, etc.) and makes salient that all the students got a (different) prize. Nonetheless, there is not a specific prize mentioned in the context such that all the students received it. As a result, the context does not permit the identification of a

unique referent for the *wh*-phrase, namely a particular prize received by all students. The example in (10) can, therefore, not be paraphrased by the identity question in (11).

(11)   The prize that all the students received – what/which one is it?

Hence, while a context that voids intervention effects (such as the one provided in (5))[4] allows for the unique identification of a referent for the *wh*-phrase, a context that yields intervention effects (such as (8) and (10)) does not. Importantly, the context must make salient a specific referent *with the property as mentioned in the question*, such as the property of having been recognized by all the witnesses in (5). The property crucially includes the intervener (in the right scope configuration). We suggest that this unique identification of the referent in the answer is what characterises contexts that void intervention effects.

To render this generalisation more precise, we employ the notion of entailment by a 'Contextually Salient Meaning (CSM)', used by Büring (2016) to describe the relation between the context and a constituent that is given. Büring's (2016) concept of a Contextually Salient Meaning is illustrated with (12). Mentioning *Sinatra* in the first part of (12) makes the referent of *Sinatra* contextually salient; the relevant CSM is thus the singer 'Frank Sinatra'. When *the singer* is mentioned later in the sentence, its referent is already salient, which makes *the singer* given. The capitals in (12) represent the main pitch accent of the sentence and [...]$_G$ represents givenness; in English, givenness is usually associated with deaccentuation (e.g. Selkirk 1984).[5]

(12)   *Sinatra's reputation among industry musicians grew swiftly, and*
            James always supPORted [the singer]$_G$.
            (Büring 2016:18, (1))

Following Schwarzschild (1999), Büring uses entailment to regulate which part of a sentence is given in a particular context. A simplified version of this entailment

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4 A further example can be found in Section 6.1, where we compare Baunaz' analysis with ours.
5 In the context of a narrow focus on a given expression (e.g. a pronoun), the accent is present, as illustrated in (i).

(i)   A: *Who did John's mother praise?*
          B: *She praised [HIM]$_F$.*
          (Schwarzschild 1999: 145, (11))

The example shows that givenness does not always impose deaccenting. This is relevant for *wh*-in-situ, as we will argue that the *wh*-phrase is given, despite the fact that it is not deaccented.

relation, which abstracts away from the difference between propositions and other semantic types, is stated in (13).[6]

(13)   An expression is given if there is a CSM that entails it.

Contextually salient meanings depend mainly on the context, but Schwarzschild (1999) and Büring (2016), among others, note that such entailment relations may be influenced by world knowledge and associations as well. Consider the example in (14), in which *New Yorker* can be deaccented as given because 'Woody Allen' is made salient by speaker A's utterance.

(14)   A: *They invited Woody Allen as their keynote speaker.*
         B: *Yeah, they WANted a [New Yorker]*$_G$*.*
         (Büring 2016: 129, (51); cf. Schwarzschild 1999: 153, (29))

In (14), the relation between *Woody Allen* and *New Yorker* involves the speakers' world knowledge that Woody Allen is a New Yorker. Glasbergen-Plas (2021) suggests that in examples such as (14), the relevant CSM *as it is perceived by the speaker* is not exactly 'Woody Allen', but rather 'Woody Allen', along with the association made salient upon hearing *Woody Allen* that 'Woody Allen is a New Yorker'. This is similar to van Deemter (1994), who states that 'the key is always in the knowledge of the speaker, but what counts is his or her knowledge *about* the reference of certain expressions in the discourse' (p. 25); see Rochemont (1986: 49) for a similar point. We, therefore, use the definition of a CSM in (15), taken from Glasbergen-Plas (2021), which is a modified version of Büring's (2016) CSM, reminiscent of Rochemont (1986: 49). The importance of the speaker's perspective in this definition will become relevant in Section 4.3.

(15)   Contextually Salient Meaning (CSM)
         A meaning is a CSM if it is perceived by the speaker as contextually salient and the speaker has no reason to believe that it is not salient for the addressee.

We are now in a position to reformulate the generalisation regarding the contexts that void intervention effects in terms of entailment. This 'Intervention effects avoidance generalisation' is presented in (16).

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6 Entailment is a relation between two propositions, while in principle every part of a sentence can be given. To ensure that the notion of entailment can be used to define givenness for parts of sentences as well, Schwarzschild, followed by Büring, assumes an 'existential type shifting' operation that turns expressions into propositions. This operation is not relevant for our analysis, as we will only be dealing with propositions.

(16) Iɴᴛᴇʀᴠᴇɴᴛɪᴏɴ ᴇꜰꜰᴇᴄᴛꜱ ᴀᴠᴏɪᴅᴀɴᴄᴇ ɢᴇɴᴇʀᴀʟɪꜱᴀᴛɪᴏɴ
      Intervention effects are voided when a Contextually Salient Meaning (CSM) entails the answer to the *wh*-in-situ question.

Let us reconsider the example in (5), repeated as (17) for convenience.

(17) During a trial, witnesses and defendants are confronted. One of the defendants has been accused unanimously. The journalist asks:
      Et   tous les témoins   ont   reconnu   qui ?
      and   all   the witnesses   have recognized who
      'And whom did all the witnesses recognize?'
      (Baunaz 2016: 157, (40b))

In (17), the relevant CSM is 'a specific defendant has been unanimously accused by all the witnesses'. As discussed above, the referent for the in-situ *wh*-phrase is this unanimously accused defendant. If this defendant is defendant number 1, called Monsieur Bisset, who is sitting on the left, the answers listed in (18) all refer to this same referent and are congruent answers to the *wh*-question. Due to this co-referentiality, the CSM entails each of these answers. In (18), phrases with the same index are co-referential.

(18) context: [a specific defendant]$_i$ has been unanimously accused,
                i.e., by all the witnesses

      entails

   answer: all the witnesses recognized [monsieur Bisset]$_i$ or
               all the witnesses recognized [defendant number 1]$_i$ or
               all the witnesses recognized [the defendant on the left]$_i$

As the context involves a CSM that entails the answer to the question, intervention effects are predicted to be absent in (17) according to the descriptive generalisation in (16).

   To summarise, this section re-analysed certain examples from the literature regarding the effect of context on intervention effects (Starke 2001; Engdahl 2006; and in particular Baunaz 2005, 2011, 2016). We proposed a more precise generalisation of the relevant contextual property. That is, intervention effects are voided when a Contextually Salient Meaning (CSM) entails the answer to the *wh*-in-situ question (16). This is only possible if the referent corresponding to the *wh*-phrase is fixed: The context must make salient a specific referent with the property as mentioned in the *wh*-in-situ question (such as the property of having been recognized by all the witnesses in (5)).

3 Choice function *wh*-in-situ

We now address the question of why intervention effects can be voided when a CSM entails the answer to the *wh*-in-situ question. In a nutshell, the explanation we propose is as follows. Recall from Section 1 the standard assumption that intervention effects arise when an intervener blocks covert movement of the *wh*-phrase, as was visualised in (3), repeated here as (19).

(19)　　[CP ... intervener ... *wh*-phrase]
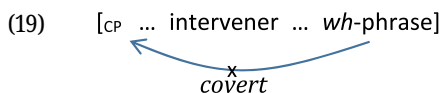
covert

Under this assumption, when a French *wh*-in-situ question does not display intervention effects, it is logical to assume that covert movement has not taken place. (We leave the discussion of whether covert movement may take place in French in the absence of an intervener to Section 5.) This means that some other mechanism enables the *wh*-phrase to be interpreted in-situ. The mechanism we propose for this is a contextually bound choice function (cf. Kratzer 1998 for specific indefinites). As the choice function can be used to interpret an in-situ *wh*-phrase, covert movement does not need to be used, thus avoiding intervention effects. Furthermore, we argue that the contextual binding of the choice function is responsible for the presence of a felicity condition (cf. Ionin 2006) on uttering these *wh*-in-situ-questions. This condition holds that a choice function is only felicitously used by a speaker when the referent picked out by the choice function is recoverable for the interlocutor. To satisfy this recoverability condition, the referent for the in-situ *wh*-phrase must be identifiable, which accounts for the contextual restriction found in the previous section. We represent an in-situ *wh*-phrase that is subject to such a contextual restriction as a choice function f, applying to a particular set. For instance, the in-situ *wh*-phrase *qui* 'who' in (17) is represented as f(person), where f is a choice function applying to the set of persons that picks out the defendant who was recognised by all the witnesses. In what follows, we first discuss the interpretation of the *wh*-phrase, before turning to the semantics of the *wh*-in-situ question as a whole and the possible answers it may have.

　　Choice functions are widely used to interpret indefinite noun phrases. A choice function is a function that applies to a non-empty set and yields an individual member of the set (see Reinhart 1998; Winter 1997). Reinhart (1998) extends the use of choice functions to in-situ *wh*-phrases in multiple *wh*-questions in English.[7] For

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7　For pronominal *wh*-phrases such as *who,* we assume that *who* integrates a choice function variable and a nominal predicate *person*, resulting in the representation 'f(person)'. As for the moved *wh*-phrase *which lady* in (20), Reinhart (1998) notes that she does not treat it as 'f(lady)' because it has

instance, an in-situ *wh*-phrase like *which book* in (20) can be represented by a choice function that applies to the set of books and selects one specific book from the set, as illustrated in (20).

(20) a. Which lady e read which book?
      b. For which < x, f >, (lady(x)) and (x read f(book))
          (Reinhart 1998: 41, (23a,b))

While the *wh*-phrase *which lady* in (20) is interpreted via movement, the *wh*-phrase of interest here, *which book*, is interpreted by applying the choice function f to the set of books. The function variable is then unselectively bound by the moved *wh*-expression *which*. We extend this analysis to single *wh*-phrases in French *wh*-in-situ questions, arguing that the lack of a moved *wh*-phrase is responsible for the lack of a sentential binder for the choice function. This in turn accounts for the special type of interpretation that is found for these *wh*-in-situ cases, as illustrated in Section 2 above.

We assume that the choice function, without an unselective binder (e.g. introduced by a moved *wh*-phrase as in (20)), needs to be contextually bound, and that this is an available option in French (see Section 6.2 for cross-linguistic variation in this respect). In this, our approach is similar to that of Kratzer (1998), who assumes that specific indefinite determiners such as *a certain* and *some* introduce choice functions that are free variables whose value is determined by the context.[8]

As argued by Breheny (2003) and Yanovich (2005), contextually assigned values are typically recoverable for the interlocutor. If the interlocutor cannot identify this value, the communication fails. As we indicated above, a choice function in a *wh*-in-situ question is recoverable from the context, if the context makes it possible for the interlocutor to identify the intended referent of the *wh*-phrase. In (17), the context introduces a specific referent corresponding to the 'person whom all the witnesses recognized'. Under our analysis, the choice function f in this *wh*-in-situ question yields this particular referent when applied to the set of persons. However, when the referent picked out by the choice function is not recoverable from the context, the

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moved to SpecCP. She nevertheless acknowledges that the *wh*-phrase could be reconstructed at LF, which would make it possible to interpret the reconstructed *wh*-phrase in the same way as the in-situ *wh*-phrase *which book*, corresponding to *f(book)* in (20b). Following Reinhart, we will leave open the question of whether the moved *wh*-phrase is interpreted by means of a choice function as well, or whether this analysis only applies to *wh*-phrases that are left in-situ.

8 Kratzer's (1998) contextually supplied choice function has been criticised by Breheny (2003) and Yanovich (2005), but their criticisms mainly concern the implicit argument that Kratzer uses to take care of specific indefinites like *a certain*. Our proposal is different, as it does not employ the implicit argument.

interlocutor cannot identify the referent intended by the speaker. This makes the *wh*-in-situ question containing the choice function infelicitous (cf. Ionin 2006).

We now turn to the proposed semantics of choice function *wh*-in-situ. In order to do so, we first briefly discuss the interpretation of *wh*-questions containing a moved *wh*-phrase, which we assume to denote a set of alternative propositions (Hamblin 1973). We adopt the idea that the shift from a proposition to a set of propositions is made by means of an operator (Karttunen 1977), which we locate in C following Heim (2000) and Dayal (2016). This yields a proto-question (see Karttunen 1977) consisting of a set containing a proposition with a free variable in the position of the *wh*-phrase's trace. Consider the proto-question exemplified in (21a) with the question operator (indicated by **?**) and its complement *[_{IP} t_i walks]*. When the question operator (defined in (21b)) is applied to its complement (which contains the free variable t_i), it derives (21c), a set containing that proposition (cf. Dayal 2016: 27, (6)). (21d) corresponds to the set notation of (21c).[9]

(21) a. $[_{C'} [_C \textbf{?}] [_{IP} t_i \text{ walks}]]$
      b. $\llbracket \textbf{?} \rrbracket = \lambda p1 \ \lambda p2 \ [p2 = p1]$
      c. $\llbracket \textbf{?} \rrbracket (\llbracket t_i \text{ walks} \rrbracket) = \lambda p1 \ \lambda p2 \ [p2 = p1] \ (\lambda w \ [\text{walks}(t_i)])$
          $\Rightarrow \lambda p \ [p = \lambda w \ [\text{walks}(t_i)]]$
      d. $\{p \mid p = t_i \text{ walks in } w\}$

To form the complete question *which student walks*, the *wh*-phrase, *which student*, is added, which functions as the binder for the free variable.

The outcome of combining the proto-question with the *wh*-phrase needs to be a set of propositions such that for each proposition there is a student that walks, as given in (22) (both as a lambda expression and in set notation):

(22) a. $\boldsymbol{\lambda p \ \exists x} \ [\text{student}(x) \ \& \ \mathbf{p} = \lambda w \ [\text{walks}(x)]]$
      b. $\{p \mid \exists x \ [\text{student}(x) \ \& \ p = x \text{ walks in } w\}$

To arrive at this semantics, the existential quantifier that is introduced by the *wh*-phrase in SpecCP needs to quantify into the proto-question (Karttunen 1977), as illustrated in (22a). As a result, the existential quantifier will be located between the lambda operator λp and the part of the formula that identifies p ($p = \lambda w \ [walks(x)]$),

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9 We adopt a modified version of the question operator, following Heim (2000). Whereas Hamblin defines questions as sets of propositions that count as possible answers to the question, Karttunen assumes that the set of propositions only contains true propositions. This difference is not essential to our approach. We assume that ordinary *wh*-questions correspond to sets of possible answers, because this makes it conceptually easier to see the difference between ordinary *wh*-questions and *wh*-in-situ questions containing a contextually bound choice function. The variable w in (21c) is a possible world variable, which is interpreted as the actual world in (21d).

rather than in the position outside the scope of the lambda operator where the *wh*-phrase is generated.

Quantifying-in can be captured either by the semantics of the *wh*-phrase or by a general rule. Dayal (2016) shows that the latter option permits the moved *wh*-phrase to be interpreted as a generalised quantifier, on a par with other indefinite determiners (see (23a)). Her version of the rule is given in (23b); see (21) above for an illustration of the semantics of the proto-question $\llbracket C' \rrbracket$.

(23)   a. $\llbracket which \rrbracket = \lambda P\ \lambda Q\ \exists x\ [P(x) \wedge Q(x)]$ *P and Q: type <e,t>*
       b. $\llbracket\ [_{CP}\ [_{DP\text{-}n}\ which\ N]\ C']\ \rrbracket = \lambda p\ [\ \llbracket which\ N \rrbracket(\lambda x_n[\ \llbracket C' \rrbracket(p)\ ])\ ]$
            (Dayal 2016: 28, (8))

The quantifying-in rule in (23b) does two different things. On the one hand, it turns the proto-question $\llbracket C' \rrbracket$ into a predicate over possible referents of the trace by adding a lambda operator λx_n, which binds the trace of the *wh*-phrase. This provides the generalised quantifier *which N* with an argument of type *<e,t>*. On the other hand, the rule relocates the lambda expression inside $\llbracket C' \rrbracket$ to a position above the *wh*-phrase introducing the existential quantifier.[10] As a consequence, the proto-question, a singleton set, is transformed into a meaningful question: a set of alternative propositions that, from the perspective of the speaker, could be either true or false.

We are now in a position to consider the interpretation of in-situ questions containing a choice function. Taking again (17) as an example, the question operator **?**, as repeated in (24a), turns the proposition in the IP in (24b) into the set in (24c); (24d) defines the same set in set notation:

(24)   a. $\llbracket \textbf{?} \rrbracket = \lambda p1\ \lambda p2\ [p2 = p1]$
       b. $[_{CP}\ \textbf{?}\ [_{IP}$ all the witnesses have recognized f(person)]]
       c. $\lambda p1\ \lambda p2\ [p2 = p1]\ (\llbracket\ [_{IP}$ all the witnesses have recognized f(person)] $\rrbracket)$
            $\Rightarrow \lambda p\ [p = \lambda w\ \forall x\ [witness(x) \rightarrow$ has recognized (x, f(person))]]
       d.   {p | p = all the witnesses have recognized f(person)}

Given that the contextual binder of the choice function f in this example is not located in the CP, the quantifying-in rule in (23b) cannot apply. As this operation is crucial for turning the singleton set into a set of alternative propositions, this implies that the set that results from the application of the question operator in (24) remains a proto-question, that is, a singleton set.[11]

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10 To be precise: it resolves the original variable inside C′ by a new variable (*p*) and adds a binder (*λp*) for this new variable *p* to the left of the *wh*-phrase.

11 The impossibility of applying the quantifying-in operation to a binder that is external to the sentence excludes the possibility of creating a set of alternative propositions in which the choice function in each proposition is bound by a different contextual binder.

This raises the question of how the resulting representation (24c), corresponding to the *wh*-in-situ question in (17), can be interpreted. Being a singleton set, it 'does not represent non-trivial choice between two or more propositions' (Heim 2000: 8, interpreting Karttunen 1977). However, the *realisation* of the unique proposition introduced by a question interpreted via a contextually bound choice function is far from trivial, at least from the perspective of the speaker. Imagine that the speaker of (17) and the interlocutor are both watching the defendants, who are respectively sitting to the left, in the middle and to the right, and that both the speaker and the interlocutor know that one specific defendant has been recognized by all the witnesses, but the speaker does not know which one. By uttering the *wh*-in-situ question in (17), the speaker indicates that s/he does not know which of the imaginable realisations of the proposition in (25) matches the actual world and thus invites the interlocutor to realise the proposition in a more informative way. (The index in (25) is added to express co-reference with the referent introduced by f(person).)

(25) Imaginable realisations of the single proposition introduced by the question in (17)/(24c) from the perspective of the speaker
   a. All the witnesses recognized [the defendant to the left]$_i$.
   b. All the witnesses recognized [the defendant in the middle]$_i$.
   c. All the witnesses recognized [the defendant to the right]$_i$.

Hence, if (25a) is the answer to the question in (17), by uttering (25a), the interlocutor provides the information to the person who uttered the *wh*-in-situ question in (17) that the contextually introduced defendant who was recognized by all the witnesses is *the one to the left*. This is what gives these *wh*-in-situ questions the flavour of identity questions of the type in (7), (9) and (11). Although the set in (24c) contains no alternative propositions, the question in (17) still elicits information that was hitherto not available to the speaker. We, therefore, suggest that the existence of non-trivially different imaginable realisations of the proposition (from the perspective of the speaker) turns the question in (17)/(24c) into a non-trivial one, despite the fact that it introduces a single proposition.[12]

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[12] Alternatively, one might argue that *wh*-in-situ questions that are interpreted by means of contextually bound choice functions are not real questions, but declaratives (cf. Biezma 2018). According to Biezma, these declaratives receive question force, because they function as non-informative answers to the question under discussion that they evoke. Being non-informative, they will not answer the QUD, which thus remains open and can be answered by the interlocutor. Within our proposal, these declaratives would fix the reference of the expression that corresponds to the *wh*-phrase, thus accounting for their context sensitivity. Note that the contextual restriction formulated by Biezma (for English cases of *wh*-in-situ) is much weaker than the one laid out in Section 2, which was motivated by the contextual restrictions found in *wh*-in-situ questions containing interveners.

Summarising this section, we adopt Kratzer's (1998) contextually supplied choice function and apply it to *wh*-in-situ questions. The *wh*-phrase is interpreted in-situ by means of a choice function, which is contextually bound. As there is no covert movement, intervention effects do not arise even when an intervener is present. We suggest that the choice function is only available when the context establishes a unique referent for the *wh*-phrase, because a felicity condition on uttering these *wh*-in-situ questions states that a choice function is only felicitously used by a speaker when it is recoverable for the interlocutor. Adopting a semantics combining insights from Hamblin (1973) and Karttunen (1977), we argued that the contextual binder, other than a moved *wh*-phrase, cannot undergo the operation that is necessary to turn the question into a set of alternative propositions. As a consequence, these questions denote sets containing a single proposition and a congruent answer to them involves providing more information about a previously established referent, corresponding to the *wh*-phrase. Thus, the semantics of a *wh*-in-situ question containing a choice function in (24) ties together the lack of (covert) *wh*-movement and the fixed referent for the *wh*-phrase.

4 Further facts explained by the choice function analysis

Sections 2 and 3 together explained why certain contexts void intervention effects: the choice function, which is only licensed when its value is recoverable for the interlocutor, interprets in-situ *wh*-phrases without covert movement. The current section describes how the choice function analysis also accounts for a range of further data. The analysis predicts a phenomenon that has been referred to in the literature as the 'extra-strong presupposition' (Section 4.1). Regarding the compatibility of *wh*-in-situ with expressions that can provoke intervention effects, it explains the observed differences between interveners (Section 4.2) and among speakers (Section 4.3). In the remainder of the paper, we refer to the questions interpreted via the choice function mechanism as 'choice function *wh*-in-situ'.

4.1 The extra-strong presupposition

The so-called 'extra-strong presupposition' is usually attributed to Chang (1997), although she cites Coveney (1989a). It is illustrated by (26) and (27), which display a *wh*-fronted and a *wh*-in-situ question, each accompanied by an answer.

(26)   Question: *Qu'   est-ce que Marie a   acheté ?* Answer: *Rien.*
             what is-it   that Marie has bought   nothing
             'What did Marie buy?'   'Nothing.'

(27)   Question: *Marie a   acheté quoi ?*   Answer: [??]*Rien.*
             Marie has bought what   nothing
             'What is it that Marie bought?'   'Nothing.'
        (adapted from Chang 1997: 42, (37), (40))

The *wh*-fronted question in (26) is a neutral question. Like other *wh*-questions, it involves an existential presupposition or implicature: the speaker expects there to be an answer to the question. The question in (26) can potentially receive a negative answer like *rien* 'nothing' (although this answer would not be expected). In contrast, the *wh*-in-situ question in (27) has been claimed to be felicitous only if the speaker already assumes that Marie bought something, since it is 'strongly presupposed' that there exists a value to fill the *wh*-phrase. The speaker merely requests more detail about the purchase, as in: what it is that Marie bought. Therefore, a negative reply like *rien* 'nothing' is quite odd.

We suggest that the questions that were claimed to exhibit an extra-strong-presupposition involve choice function *wh*-in-situ. To license (27) as choice function *wh*-in-situ, that is, for the value of the choice function to be recoverable, the referent for the *wh*-phrase must be identifiable in the preceding context: the entity that Marie bought must already be salient for the speaker. The speaker merely requests further information about this entity. The reply that Marie bought nothing would then not only be an unexpected answer but also an incongruent one.

Another example that has been claimed to exhibit an extra-strong presupposition is given in (28). This example illustrates the relevance of the speaker's associations based on world knowledge for this alleged stronger presupposition.

(28)   A: *C'   est l'   anniversaire de Pierre la   semaine prochaine.*
             it   is   the birthday   of Pierre the week   next
             'It's Pierre's birthday next week.'
        B: *Et   tu   vas lui   acheter quoi ?*
             and you will for.him buy   what
             'And what will you buy for him?'
             (Cheng and Rooryck 2000: 24, ftn. 3, adapted from Chang 1997)

Speaker A mentions that Pierre's birthday is coming up. Based on speaker B's knowledge of the world, this leads him/her to assume that there is a particular present that speaker A is planning to buy for Pierre. The question of what this present is, is merely 'seeking details on an already established (or presupposed) situation' (Chang 1997: 46). Under the current proposal, the context in (28) (in combination with

world knowledge) can make the referent for the in-situ *wh*-phrase, the present that speaker A is planning to buy for Pierre, salient for speaker B, which makes the value of the choice function recoverable. To be precise, the relevant CSM is 'semi-salient' in this example (see also Section 4.3): only one possible interpretation of the context makes a specific referent for the *wh*-phrase salient, while an interpretation that does not license the choice function is also possible. On the interpretation of the context that makes salient a specific referent, the salient present is the unique established referent for the *wh*-phrase. Speaker B in (28) does not know to what type of present this referent corresponds and thus ignores which imaginable realisation of the single proposition is a true proposition in the actual world. By uttering (28), speaker B requests information about the identity of this previously established referent.

It was previously not clear what the conceptual status was of the extra-strong presupposition or where it might come from. Starke (2001) and Baunaz (2005, 2011, 2016) attribute the alleged presupposition to a particular feature that is part of the internal structure of a strongly presupposed in-situ *wh*-phrase, but not of a *wh*-fronted one. In Baunaz's (2011, 2016) terminology, an in-situ *wh*-phrase with the feature 'specific' or 'partitive' carries a stronger presupposition than a 'non-presuppositional' *wh*-phrase. Likewise, Boeckx attributes the stronger presupposition to a definite presuppositional D feature on an in-situ *wh*-phrase (Boeckx 1999; Boeckx et al. 2001). These proposals place the alleged presuppositional nature of *wh*-in-situ, which at first sight seems like a semantico-pragmatic phenomenon, in the morphology (nano-syntax) of the *wh*-phrase. Our proposal is similar in the sense that it attributes a specific or definite-like meaning to the *wh*-phrase. However, our analysis relates this meaning to the lack of *wh*-movement and attributes it to a felicity condition. This ties the extra-strong presupposition, the fact that it is associated with in-situ *wh*-questions in particular, and the lack of intervention effects in such questions all together.

Mathieu (2002) describes the stronger presupposition in terms of background in contrast to focus. Chang (1997), on the other hand, mentions that 'all information other than the questioned element is *taken for granted*' and that 'the information expressed by everything, except the *wh*-word is already a salient part of the previous discourse' (p. 44). This intuition is made specific by the current proposal: the referent for the *wh*-phrase must be established in the context to make the choice function recoverable, predicting the 'extra-strong presupposition'.

Recall from Section 3 that we assume a felicity condition on the use of a choice function (cf. Ionin 2006), according to which the choice function must be recoverable for the interlocutor. Ionin argues for the specific indefinite *this* (as in *There is this book about questions you really should read*) that it is subject to a felicity condition, in contrast to a definite article, which introduces a presupposition. Contrary to presuppositions, felicity conditions do not require maximisation. If one can use a definite article rather than an indefinite one, one will do so due to Maximise

Presupposition (Heim 2008). However, specific indefinite *this N* can be replaced by *an N* without provoking a problem. Something similar can be observed in *wh*-in-situ questions. It does not seem to be the case that a context that permits the use of a choice function *wh*-in-situ question is incompatible with ordinary *wh*-questions. That is expected if it is a felicity condition that provokes the context dependency. In that sense, the phenomenon referred to as an 'extra strong presupposition' is a combination of the same existential presupposition that is commonly assumed for any *wh*-question and a felicity condition on the interpretation of the *wh*-phrase (via the contextually bound choice function).

4.2 Choice functions and apparent interveners

We argued in Section 3 that a choice function *wh*-in-situ question is unacceptable if the referent for the *wh*-phrase is not retrievable from the context, and that these sentences are not sensitive to intervention effects. On the basis of this, one might expect classical interveners to not induce infelicity; as long as the referent picked out by the choice function is recoverable by the context, the sentence should be felicitous. Nevertheless, the matter is more complicated. We show below that the class of interveners is not homogeneous: some interveners seem to make in-situ *wh*-questions unacceptable while others appear to be more permissive. In this section, we argue that differences within the class of interveners are due to differences in how difficult it is for speakers to think of a context that satisfies the recoverability condition associated with the choice function. Given this explanation, the unacceptability provoked by the presence of an intervener in choice function *wh*-in-situ is thus not an intervention effect (see (3) above), and the differences between (apparent) interveners follow from our analysis.

Certain expressions, such as focus adverbs (*seulement* 'only') and negative expressions (*(ne) jamais* 'never' and *(ne) personne* 'no one'), are commonly assumed to result in unacceptability (e.g. Baunaz 2011; Engdahl 2006; Hamlaoui 2010; Mathieu 1999).

(29)   *<u>Seulement Jean</u> arrive à faire quoi ?
        Only   Jean   arrives to do   what
       Intended: 'What does only JEAN manage to do?'
       (Mathieu 1999: 447, (12a))

Other expressions are more controversial in that previous literature does not consistently treat them as interveners. This is particularly true of *(ne) pas* 'not' and several universal quantifiers (*toujours* 'always', *tous les N* 'all the N', *tout le monde*

'everybody' and floating *tous* 'all'). The examples in (30) and (31) display contradictory judgements of sentences with the same intervener.

(30) a. **Tu   ne   fais   <u>pas</u>   quoi   ce   soir ?*
            you   NE   do   not   what   this   evening
            Intended: 'What aren't you doing tonight?'
            (Mathieu 2002: 35, (2a))

      b. *Il   (ne)   doit   <u>pas</u>   toucher   qui ?*
           he   NE   must   not   touch   who
           'Who mustn't he touch?'
           (Adli 2006: 177, (9a))

(31) a. **<u>Tout   le   monde</u>   a   vu   quoi ?*
            all   the   world   has   seen   what
            Intended: 'What did everyone see?'
            (Mathieu 1999: 464, (45b))

      b. *Et   à   cette   fête,   à   ton   avis,   <u>tout   le   monde</u>   a   embrassé*
           and   at   this   party   in   your   opinion   all   the   world   has   kissed
           qui ?
           whom
           'And at this party, in your opinion, whom did everybody kiss?'
           (adapted from Poletto and Pollock 2015: 86, (20a))

The availability of a contextually bound choice function sheds light on these controversies. First of all, if a sentence is presented to an informant in isolation (i.e. without context), the informant is free to construe their own context, which may or may not license the use of a contextually bound choice function. Crucially, for some interveners, it is easier to envisage a context that makes the choice function recoverable than for others. An example of an intervener where this is relatively easy is *plusieurs N* 'several *N*'. The sentence in (32) with this intervener was judged acceptable (Adli 2006).[13]

(32) *<u>Plusieurs   chênes</u>   ont   été   coupé   où ?*
       several   oaks   have   been   cut   where
       'Where have several oaks been cut?'
       (Adli 2006: 180, (16a))

To license a choice function in (32), the context must make salient that there is a specific place where several oak trees have been felled. The speaker then inquires where this place is. The noun phrase *plusieurs chênes* 'several oaks' can be either

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13 Adli mentions that the sentence was presented with context but does not report on the context itself.

interpreted collectively or distributively. If it is interpreted collectively, the oaks will be all felled in a single place. In this case, the interlocutor may quite easily imagine a context in which there is a salient, contextually given place where these trees have been felled.

In contrast to *plusieurs N* 'several *N*', it is more difficult to construe a context that establishes a referent for a question containing *(ne) que* 'only', as illustrated by (33):

(33)   #*Jean (n') a   parlé   <u>qu'</u>   à Suzanne dans quelles circonstances ?*
       Jean NE has spoken only to Suzanne in   what   circumstances
       'In what circumstances did Jean only speak to Suzanne?'

We suggest that (33) is judged to be unacceptable when presented to informants in isolation because it is difficult to envisage the necessary context, as indicated by the #.[14] For the choice function to be licensed in (33), the context must make salient that there exist particular circumstances under which Jean only spoke to Suzanne. It is not straightforward to envisage a context that makes this salient, as the restriction on the context is quite specific. Nonetheless, a question with the focus expression *(ne) que* 'only' can be made felicitous given an appropriate context; native speakers we consulted found the example in (34) acceptable.[15] (The intended reading of (34) is that at the events at the end of the year, they did not speak to other people than Suzanne.)

(34)   Pierre, Paul et Jean sont tous allés au lycée ensemble. À la fin de l'année, chacun d'eux n'a parlé qu'à Suzanne. Pierre l'a croisée pendant les examens, Paul lui a parlé lors de la remise des diplômes.
       'Pierre, Paul and Jean all went to secondary school together. At the end of the school year, each of them only spoke to Suzanne. Pierre met her during the exam period, Paul spoke to her at the graduation ceremony.'

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14 Many authors mark sentences containing 'apparent interveners' by a star rather than a hash. In the examples that we cite from the literature, we use the judgements as indicated by the authors.
15 We thank Romane Pedro and Marie Pedro for helping us construct the relevant examples and contacting other speakers, who confirmed their judgements. One of our reviewers pointed out that they did not accept the sentence in the presence of *ne*, because this would involve a clash of registers: more formal due to the presence of *ne* and informal because of the use of *wh*-in-situ. We double-checked the examples with and without *ne* with several speakers, who accepted them in the relevant context, independently of the presence or absence of *ne*. Following Adli (2006), who also tested *wh*-in-situ questions with and without *ne*, we put *ne* between brackets in (33) and (34). In examples cited from the literature, we follow the authors. Note furthermore that some speakers we consulted would also accept (34) with *seulement* instead of *(ne) que*, while others only accepted (34) with *(ne) que*. We leave the compatibility of *ne* and *wh*-in-situ as well as the question why *seulement* seems less acceptable in *wh*-in-situ, even when the right context is provided, for future research.

> *Et Jean, il (n̲'̲) a   parlé   q̲u̲'̲ à Suzanne dans quelles circonstances?*
> and Jean he NE has spoken only to Suzanne in   what   circumstances
> 'And Jean, in what circumstances did he only speak to Suzanne?'

Note that the context in (34) is much less common in the sense that it describes a very particular situation (three people only talking to a certain person and not to others in different circumstances) and a communicative setting that is not completely straightforward either. This illustrates the contrast with (32), for which both the situation (a collection of trees being felled) and the communicative context (a discourse referent corresponding to the place where it happened is salient in the context) are much more straightforward. In sum, the differences between apparent interveners can largely be explained by how easily one can construe a context that licenses the use of a choice function for a sentence containing that apparent intervener.

4.3 Choice functions and differences among speakers

There is also variation in judgements of sentences containing the same 'intervener', which seems to be due to differences between speakers.[16] An example in which the same sentence receives contradictory judgements is given in (35) (see also (30) and (31) above).

(35)   (#) *Il   (n')   a   p̲a̲s̲   rencontré   qui ?*
          he   NE   has   not   met   who
          'Whom didn't he meet?'
          (✓Adli 2004: 203, (3a)/#Chang 1997: 63, (34a))

The choice function mechanism can also shed light on such variation. As was discussed above, informants can always construe (more details of the) context themselves. One informant may envisage another context or a more elaborate one than another. Some informants may be very good at quickly construing the relevant context, allowing them to accept questions with interveners more easily. Recall also from Section 2 that a speaker's associations may influence what a sentence makes salient for them. For example, a person's beliefs about and experiences with children may influence what the question in (36) makes salient.

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16 As was alluded to in the discussion of examples (33)/(34), aspects of the sentence meaning other than the intervener may also affect how easily one can envisage the necessary context, which should be considered when comparing judgements of different sentences (containing the same intervener) (Glasbergen-Plas 2021).

(36)   ?*Et   ta   fille,   elle   ne   mange   <u>pas</u>   quoi ?*
             and   your   daughter   she   ɴᴇ   eats   not   what
             'And your daughter, what doesn't she eat?'
             (adapted from Engdahl 2006: 100, (23))

Even if a sentence is presented to an informant in a particular context, this context may allow for more than one interpretation, depending on the speaker. An example is the context in (37), adapted from Engdahl (2006).

(37)   *Semi-salient*
             Anne has two children, a son and a daughter. They are both rather picky about what they eat. Anne mentions that her son doesn't eat fish. Her friend asks:
             (?) *Et   ta   fille,   elle   ne   mange   <u>pas</u>   quoi ?*
                and   your   daughter   she   ɴᴇ   eats   not   what
                'And your daughter, what doesn't she eat?'
                (adapted from Engdahl 2006: 100, (23))

Does the remark that both children are *rather picky* establish that there is a specific thing that Anne's daughter does not eat (at all)? That seems to be open to interpretation. By analogy with the son, there may also be a specific type of food that the daughter does not eat. Nevertheless, the daughter could also just be generally fussy about her food. We call the meaning that would not so easily license the use of a choice function in (37) 'semi-salient': the context allows for both an interpretation that makes the choice function recoverable and an alternative interpretation. One can render the context in (37) more explicit so that it leaves no more room for an alternative interpretation (38).

(38)   *Salient*
             Anne has three children, two sons and a daughter. She has a rule at home according to which each child is allowed to have one type of vegetable that they do not eat. Anne mentions that her oldest son doesn't eat cabbage and her youngest son doesn't eat sprouts. Her friend asks:
             Et   ta   fille,   elle   ne   mange   <u>pas</u>   quoi ?
             and   your   daughter   she   ɴᴇ   eats   not   what
             'And your daughter, what doesn't she eat?'

In (38), we (a) added a child, strengthening the sense of analogy, (b) made explicit that each child has the relevant property of not eating a specific thing and (c) made the contextual restriction of the *wh*-phrase more specific (vegetables instead of food items in general). All these elements increase the salience of a specific type of vegetable that Anne's daughter does not eat.

In sum, the choice function proposal predicts the observed variation in judgements. Variation is expected because individual speakers may envisage and interpret contexts differently.

5 Two groups of French speakers

We have shown in the previous sections how the availability of a contextually licensed choice function ties together the absence of intervention effects in certain contexts and the 'extra-strong presupposition', and how it explains differences between apparent interveners and speakers regarding apparent intervention effects. Nevertheless, as we lay out below, there is strong evidence that French *wh*-in-situ questions do not give the appearance of an extra-strong presupposition for all speakers. This can be explained if there is also a second mechanism to interpret French *wh*-in-situ, namely covert movement, which does not impose restrictions on the context. We hypothesise that this second mechanism is only available to a subset of French speakers (39) for interpretating single *wh*-in-situ.[17,18]

(39)   TWO SPEAKER GROUPS HYPOTHESIS
         While the contextually licensed choice function is available to all speakers,
         covert movement is only available for the interpretation of *wh*-in-situ to a
         subset of the speakers of French.

We call speakers who only have the choice function option 'Type A speakers' and speakers who have both mechanisms to interpret *wh*-in-situ 'Type B speakers'.
      The idea that the contextual restrictions on *wh*-in-situ are not the same for all speakers was recently discussed by Baunaz and Bonan (2023) (see also Larrivée 2019; Glasbergen-Plas 2021). Baunaz and Bonan distinguish two varieties of European French: Standard Colloquial (*SC*) and Non-Standard Colloquial French (*NSC*). This is similar to Zribi-Hertz' (1994) distinction between Colloquial French and Very Advanced French, both of which differ from Modern Standard French. Modern Standard French is defined as the productive variant of formal French, while both colloquial French and Very Advanced French are both varieties of informal French. Baunaz and Bonan (2023) show on the basis of corpus data from different time periods that the contextual restrictions on *wh*-in-situ diminish over time, and argue

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17 It remains an open question whether there are also French speakers without a contextually licensed choice function in their grammar for interpreting *wh*-in-situ. These speakers must use covert *wh*-movement for all *wh*-in-situ interpretation. Therefore, they would be predicted to never allow interveners in *wh*-in-situ questions, irrespectively of the context.
18 Covert movement is, however, expected to be available to all speakers of French for the interpretation of multiple questions.

on the basis of this that contextually restricted *wh*-in-situ is a feature of Standard Colloquial French, while *wh*-in-situ is not contextually restricted in Non-Standard Colloquial French.

The current proposal is in line with the observations of Baunaz and Bonan. However, rather than focusing on the changes in contextual restrictions on *wh*-in-situ over time, we aim at analysing the properties of the two groups of speakers based on our hypothesis in (39). Whereas speakers of group A are restricted to Standard Colloquial French, speakers of group B also draw on Non-Standard Colloquial French (but see footnote 17 above).

The remainder of this section shows how the combination of the 'Two speaker groups hypothesis' and the choice function analysis explains a further set of data: the differences among speakers regarding the extra-strong presupposition (Section 5.1) and regarding the presence of a large sentence-final rise in prosody (Section 5.2). The third subsection discusses the predictions regarding intervention effects for the two groups of speakers (Section 5.3). The section ends with a summary (Section 5.4). Below, we refer to questions interpreted via covert movement as 'covert movement *wh*-in-situ'.

5.1 Differences among speakers: the extra-strong presupposition

The view presented in Section 4.1, according to which French *wh*-in-situ questions involve an extra-strong presupposition, is quite wide-spread in the literature (Boeckx 1999; Boeckx et al. 2001; Boucher 2010; Cheng and Rooryck 2000; Mathieu 2002; Zubizarreta 2003). However, many other authors maintain that French *wh*-in-situ questions do not involve a stronger presupposition than *wh*-fronted questions (Adli 2006; Aoun et al. 1981; Beyssade 2006; Hamlaoui 2011; Mathieu 2004; Oiry 2011; Shlonsky 2012; Starke 2001). A third position holds that only some *wh*-in-situ questions involve an extra-strong presupposition (Baunaz 2005, 2011, 2016; Coveney 1989a,b; Starke 2001; Zimmermann and Onea 2011; in a different framework Myers 2007).

While our proposal aligns with the last position, the 'Two speaker groups hypothesis' put forward in this section also accounts for the data variation. Recall that the grammar of Type A speakers only has a contextually licensed choice function to interpret *wh*-in-situ. Thus, for Type A speakers, French *wh*-in-situ questions require a particular type of context, which makes the referent for the *wh*-phrase recoverable (e.g. Chang 1997; Cheng and Rooryck 2000). On the other hand, for Type B speakers, who also have the covert movement option, French *wh*-in-situ questions can also be used out-of-the-blue (e.g. Adli 2006; Hamlaoui 2011).

Direct evidence for the existence of a group of speakers who can interpret *wh*-in-situ via covert movement is to be found in Glasbergen-Plas (2021). The author reports on a rating study investigating the felicity of French *wh*-in-situ long-distance questions in an out-of-the-blue context (as well as indirect *wh*-in-situ questions and *wh*-in-situ questions containing an adjunct island).[19] The contexts used in the study were specifically designed to exclude the possibility of licensing via a contextually bound choice function. An example is presented in (40).

(40)   *Tu es assis dans le bus qui va jusqu'à l'université. Tu parles avec un ami qui suit les mêmes cours que toi. Il te parle de ses projets pour l'été. Soudain, tu lui dis :*
'You're sitting on the bus to the university. You're talking to a friend, who is in the same program as you. He tells you about his plans for the summer. Suddenly you say:'

Sinon,	*je*	*pense*	*à*	*ça,*
by the way	I	think	of	that

'By the way, I'm just wondering,

Tu	*crois*	*que*	*le*	*prof*	*a*	*prévu*	*quoi*	*pour*	*l'*	*examen ?*
you	believe	that	the	teacher	has	planned	what	for		the exam

what do you think the teacher planned for the exam?'

The questions in contexts were rated by monolingual native speakers of French ($N =$ 64, 20–35 years of age) who originated from different regions in France. Questions as in (40) received a mean rating of 4.0 on a scale from 1.0 to 5.0. That is, speakers in a relatively young age group accepted French *wh*-in-situ questions in a context designed to exclude the use of a choice function. Under the current analysis, this confirms the existence of Type B speakers, speakers who have a second mechanism to interpret French *wh*-in-situ questions in addition to a choice function. The rating study also suggests that the group of Type B speakers includes speakers in a younger age group (age 20 to 35).[20]

As indicated above, these conclusions are in line with the findings of Baunaz and Bonan (2023), who show that the proportion of *wh*-in-situ questions of which the propositional contents is not contextually given increases over time.

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19 There is discussion in the literature about the acceptability of long-distance *wh*-in-situ questions (e.g. Bošković 1998, 2000; Oiry 2011).

20 Baunaz (2005) suggests that embedded *wh*-in-situ is only possible with a 'specific' *wh*-phrase, which is not in accordance with the results of the experiment reported here: both mechanisms seem to allow for embedded *wh*-in-situ. Note that there is nothing that would block an analysis of embedded *wh*-in-situ by means of a choice function, provided that the context is sufficiently rich to identify the intended reference of the *wh*-phrase.

5.2 Differences among speakers: the large sentence-final rise

A second area of speaker variation that the 'Two speaker groups hypothesis' sheds light on concerns judgements regarding the presence of a large sentence-final rise (i.e. a rise with a large pitch excursion). We first summarise the debate in the literature on this topic before explaining the current proposal's contribution.

The main significance of the alleged final rise stems from a theoretical paper by Cheng and Rooryck (2000), who propose that *wh*-in-situ questions are licensed by their rising intonation. A production study by Déprez et al. (2013) provides 'nuanced support' (p. 15) for Cheng and Rooryck's claim, although Tual (2017) could not replicate Déprez et al.'s findings. An opposing view states, however, that French *wh*-in-situ questions end in a fall (Di Cristo 1998; Mathieu 2002; Starke 2001). Yet a third position holds that a large sentence-final rise is possible, but optional rather than mandatory (Adli 2004, 2006; Wunderli 1978, 1982, 1983; Wunderli and Braselmann 1980). Reinhardt (2019) settles this debate to some extent. In two corpus studies, she shows that while both fronted and in-situ *wh*-questions occur with a rising as well as a falling final contour, a large sentence-final rise is more frequent in *wh*-in-situ than in *wh*-fronted questions.

A production study by Glasbergen-Plas et al. (2021) throws new light on the observed variation. They investigated the prosody of French *wh*-in-situ questions with either a broad focus or a narrow focus on the *wh*-word (as well as echo questions). Although it is sometimes assumed that the focus in *wh*-questions necessarily equals the *wh*-phrase, this is not the case in all languages (Beyssade 2006; Eckardt 2007; Jacobs 1984, 1991; Ladd 2009; Reich 2002). *Wh*-questions in French may be prosodically marked for focus (Beyssade 2006; Glasbergen-Plas et al. 2021). Crucially, Glasbergen-Plas et al. show that French *wh*-in-situ questions with a narrow focus on the *wh*-word display a large sentence-final rise, while *wh*-in-situ questions with broad focus do not.[21] Based on known correlates of focus marking in French, the authors analysed the large sentence-final rise as a correlate of narrow focus marking.[22] In other words, they show that the large final rise observed in some French *wh*-in-situ questions is a marker of narrow focus on the *wh*-word.

A key point to note is that choice function *wh*-in-situ questions always have a narrow focus on the *wh*-word. As an illustration of this point, consider a context in

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[21] Broad focus questions exhibited a mostly falling contour which ended in a very small rise.
[22] In the experiment, the sentence-final rise of the narrow focus questions was a result of 'tone copying' (Martin 1981), the copying of the F0 maximum (highest pitch) on the final syllable of the *wh*-phrase (marking the end of the focus) to the final syllable of the utterance. Tone copying shows up when the focused constituent is not in final position and occurs also in declaratives and yes/no questions (Beyssade et al. 2004; Clech-Darbon et al. 1999; Delais-Roussarie et al. 2004; Doetjes et al. 2004).

which a speaker knows that both Anne and Sophie have booked a restaurant for Thursday evening, to have dinner with their respective families. In this context, the in-situ *wh*-phrase in (41) is licensed as choice function *wh*-in-situ, because it has been established in the context that there is a specific restaurant where the addressee made the reservation.

(41)   Speaker addressing Sophie:
        Anne   m'   a   dit   qu'   elle   a   réservé   au   Pavillon pour   jeudi
        Anne   me   has said that she   has booked   at.the Pavillon for   Thursday
        soir.   Et   toi,   tu   as   réservé   quel   resto   pour
        evening and   you   you   have booked   which restaurant for
        jeudi   soir ?
        Thursday   evening
        'Anne told me she's booked the restaurant Pavillon for Thursday evening. And what/which restaurant did you book for Thursday evening ?'
        (adapted from Glasbergen-Plas et al. 2021: 581, Fig. 3)

In the described context, the *wh*-in-situ question has a narrow focus on the word *quel* 'which', as *resto* 'restaurant' and the rest of the sentence are contextually salient. Thus, a context that licenses the use of the contextually bound choice function elicits questions with a narrow focus on the *wh*-word.

As this large final rise has been shown to be part of the characteristic tune for utterances with a narrow focus on the *wh*-word (Glasbergen-Plas et al. 2021), the fact that choice function *wh*-in-situ questions have a narrow focus on the *wh*-word suggests that these questions tend to be marked by a large sentence-final rise.[23] Consequently, for Type A speakers, who only have choice function *wh*-in-situ, French *wh*-in-situ questions typically display such a rise. Covert movement *wh*-in-situ questions may occur in various contexts, including out-of-the-blue cases (Glasbergen-Plas 2021; see Section 5.1), hence may also have other focus structures. Given that the contour used in the broad focus condition in Glasbergen-Plas et al. (2021) did not end in a large final rise, such a rise is not a typical feature of French *wh*-in-situ questions for Type B speakers. Thus, the 'Two speaker groups hypothesis' sheds new light on the longstanding debate concerning the alleged presence of a final rise. The results of Glasbergen-Plas et al. (2021) suggest that the authors who typically

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23 As one of the reviewers points out, one-to-one relations between syntactic structures and prosodic realisations are desired by syntacticians, but typically not found by phonologists. The study reported in Glasbergen-Plas et al. (2021) confirms this: the characteristic tunes used for the narrow focus condition and the broad focus condition were each used in about 70 % of the utterances in the corresponding condition. In line with the reviewer's remark, we suspect that the claims made in the syntactic literature about the necessity of a prosodic rise in *wh*-in-situ questions are too strong.

observed a falling contour (e.g. Mathieu 2002) investigated questions with broad focus.

5.3 Differences among speakers: intervention effects

If a group of French speakers who have both the choice function and covert movement strategies (Type B speakers) are to interpret *wh*-in-situ questions, the question arises what the predictions are for this group regarding (apparent) intervention effects. The short answer to this is that the predictions for both speaker groups are the same. Type B speakers are not expected to accept a wider range of sentences containing interveners, since an intervener blocks covert movement (cf. (3) in Section 1). The only difference between the two speaker groups regarding interveners is that true intervention effects (i.e. not apparent intervention effects) can only arise for Type B speakers, because they have the covert movement option.

Nonetheless, both Type A and Type B speakers may in some cases accept a *wh*-in-situ question without an intervener yet fail to accept it when an intervener is added. The argument for why this is so runs parallel to the argument in Section 4.2 about differences between interveners. We argued in Section 4.2 that, when confronted with a sentence without context, it is easier to envisage a context that makes a choice function recoverable for certain interveners, such as *plusieurs N* 'several *N*', than for others, such as *ne que* 'only' in (33), repeated here as (42).

(42) *#Jean (n') a   parlé   qu'   à Suzanne dans quelles circonstances ?*
        Jean NE has spoken only to Suzanne in   what   circumstances
        'In what circumstances did Jean only speak to Suzanne?'

We furthermore suggest that it is often more difficult to envisage a context that makes the choice function recoverable for a sentence *with* an intervener than for one *without* an intervener. For (42) to be interpretable via a choice function, the context must establish a referent for *particular circumstances under which Jean only spoke to Suzanne*. In contrast, a choice function in the same sentence without the intervener (43) would be interpretable if the context makes salient *particular circumstances under which Jean spoke to Suzanne.* We suggest that the latter type of context is easier to envisage than the former, because *ne que* 'only' imposes quite a specific restriction on the context (as in the comparison between *plusieurs N* 'several *N*' and *ne que* 'only' in Section 4.2).

(43) *Jean a   parlé   à   Suzanne dans quelles circonstances ?*
        Jean has spoken to Suzanne in   what   circumstances
        'In what circumstances did Jean only speak to Suzanne?'

We, therefore, predict that both types of speakers may accept a *wh*-in-situ question without an intervener. The acceptance goes down when an intervener is added, because speakers may no longer be able to envisage the necessary context.

5.4 Differences among speakers: summary

The properties of *wh*-in-situ questions for the two groups of speakers are summarised in Table 1. The proposal sheds light on a number of longstanding debates between authors.

The first concerns the aforementioned 'extra-strong-presupposition'. Under our analysis, authors who argue for the presence of the presupposition (e.g. Boeckx 1999; Chang 1997; Cheng and Rooryck 2000) rely on judgements of Type A speakers while authors who argue against such a presupposition (e.g. Adli 2006; Mathieu 2004; Shlonsky 2012) rely on those of Type B speakers. In the absence of an intervener, Type A speakers still need an appropriate context to make the choice function recoverable, while Type B speakers do not, because they can rely on covert movement.

The second debate concerns the large sentence-final rise (Cheng and Rooryck 2000; Déprez et al. 2013). Under our analysis, choice function *wh*-in-situ questions always have a narrow focus on the *wh*-word. A large final rise is a prosodic correlate of this focus structure (Glasbergen-Plas et al. 2021). In other words, for Type A speakers, *wh*-in-situ questions always display a large final rise, while for Type B speakers, various prosodic tunes are possible depending on the context, including a falling contour.

Lastly, we have shown that it is easier for speakers to contextually establish a unique referent for the *wh*-phrase for certain interveners than for others. This explains the observed variation in judgements between different interveners (e.g. Baunaz 2005, 2011). We also illustrated how different speakers may envisage and

Table 1: Overview of the properties of *wh*-in-situ for the two hypothesised groups of speakers.

	Type A speakers	Type B speakers	
Licensing mechanism	Choice function	Choice function	Covert Movement
Extra-strong-presupposition	Yes	Yes	No
Intervener – f recoverable	OK	OK	No
Intervener – f not recoverable	No	No	No
Intonation Large S-final rise	Yes	Yes	No
No large S-final rise	No	No	Yes

interpret contexts differently. This sheds light on the observed speaker variation regarding intervention effects (e.g. Adli 2006; Mathieu 2002). It is important to realise that interveners do not differentiate between the two groups of speakers: both groups need to interpret a *wh*-in-situ question containing an intervener via a choice function, as an intervener blocks covert moment.

There seems to be a tendency for older literature to present data that, under the current analysis, represent a Type A grammar (only a choice function) (e.g. Boeckx et al. 2001; Chang 1997; Cheng and Rooryck 2000), whereas later literature is more often consistent with a Type B grammar (also covert movement) (e.g. Baunaz 2011; Reinhardt 2019). Even though this is far from a clear correlation across the relevant publications, we suggest that the picture is consistent with the idea that the language is changing: the grammar of Type A speakers may reflect an earlier variety of colloquial French. This variety would be a *wh*-fronting language that only allows for contextually restricted *wh*-in-situ. Possibly, contextually restricted *wh*-in-situ was gradually used more freely, for instance in the case of 'semi-salience' (see Section 4.3). Thus, a Type B grammar would emerge, in which covert movement is permitted to resolve in-situ *wh*-phrases, leading to felicitous use of out-of-the-blue *wh*-in-situ questions by a subset of speakers. This scenario is in accordance with observations by Larrivée (2019) and the corpus data presented in Baunaz and Bonan (2023).

6 Conclusion and discussion

This paper has put forward a novel account of French *wh*-in-situ questions. We propose that the grammar of French contains a contextually bound choice function. The choice function allows a *wh*-phrase to be interpreted in-situ. However, the choice function's value must be uniquely specified by the context to be recoverable for the interlocutor. We suggest that this is the origin of what has so far been described as the 'extra-strong presupposition' of French *wh*-in-situ questions (Chang 1997; Cheng and Rooryck 2000; Coveney 1989a, b). The proposed account explains the observation that a French *wh*-in-situ question containing an intervener may become acceptable when placed in a certain type of context (Baunaz 2005, 2011, 2016; Beyssade 2006; Engdahl 2006; Starke 2001). We further hypothesise that there are two groups of French speakers ('Two speaker groups hypothesis'). While Type A speakers can only interpret *wh*-in-situ questions via the choice function, Type B speakers can additionally interpret *wh*-in-situ via covert

Table 2: Properties of French *wh*-in-situ questions explained by the account.

Property	Account
Absence of intervention effects in certain contexts	The referent for the *wh*-phrase must be recoverable in the context to interpret the choice function.
Extra-strong presupposition	The referent for the *wh*-phrase has already been established in the context.
Intervention effects: differences between interveners	Interveners differ in how easy it is for speakers to construe the necessary context.
Intervention effects: differences among speakers	Speakers may vary in their ability to envisage and interpret contexts ('semi-salience').
Speaker variation regarding the extra-strong presupposition	Two speaker groups hypothesis: covert movement is only available for a subset of speakers.
Speaker variation regarding the presence of a large final rise	Two speaker groups hypothesis + experimental results of Glasbergen-Plas et al. (2021)

movement. Table 2 provides an overview of the properties of French *wh*-in-situ questions explained by the current account.

6.1 Comparison with Baunaz (2005, 2011, 2016), building on Starke (2001)

We now compare our account to the proposal by Baunaz (2005, 2011, 2016), which builds on Starke (2001) (henceforth: B/S). B/S propose a hierarchy of nanosyntactic features for both in-situ *wh*-phrases and interveners. As Baunaz (2016: 164) states, a *wh*-phrase 'that has something more than a potential intervener is free to move, whereas a [*wh*-phrase] that has either something less, or that has a similar feature composition as a potential intervener, will be blocked'. Specifically, Baunaz distinguishes between 'specific', 'partitive' and 'non-presuppositional' *wh*-phrases and interveners, where 'specific' has 'something more' than 'partitive' and 'partitive' has 'something more' than 'non-presuppositional'.[24] Therefore, a 'partitive' *wh*-phrase would be able to cross a 'non-presuppositional' intervener, but not a 'specific' one.

   The example in (44) illustrates for Baunaz the extraction of a partitive *wh*-phrase.

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[24] The answer to a question with a 'specific' *wh*-phrase refers to a particular individual that the speaker already has in mind – the speaker merely asks for the identity of this individual. A *wh*-phrase with the feature 'partitive' is felicitous in a context that mentions the existence of a pre-established set. The term 'non-presuppositional' refers to the absence of either a 'specific' or 'partitive' feature.

(44) Claire is a regular at Rainbow gym. She goes there 3 times a week. As it is usually the case in these infrastructures, she has a coach. Her coach usually prepares a plan for the day, i.e., she needs to use <u>all the machines listed</u>. That day Claire is a bit tired and she practices slower than usual. At the end of the session, she goes to the coach and tells him that <u>she could not use all the machines</u>. The coach, who wanted to prepare the next session is a bit angry. He asks:

Bon, t' as <u>pas</u> utilisé quelle(s) machine(s) ?
Well you have not used which(PL) machine(PL)
'Well, which machine(s) didn't you use?'
(adapted from Baunaz 2016: 154–155, (35), underlining ours)

In the original example, the *wh*-phrase is written as singular (*quelle machine*), and Baunaz assumes that this is a partitive *wh*-phrase: there is a pre-established set of machines (the ones that Claire did not use) and the singular *wh*-phrase picks out one of these machines. Partitive readings are not expected to be possible under the current proposal: as one can conceive of different subsets from the mentioned set, the reference of the *wh*-phrase is not determined, and thus not recoverable from the context.

However, as the plural markers are not pronounced, the question in (44) does not specify whether *quelle(s) machine(s)* is a singular or a plural form. In the given context, it is likely that the coach wants to know which machine(s) Claire did not use, as this is the information they need for preparing the program for the next session. If Claire did not use the rowing machine, this machine might for example be referred to as 'the rowing machine', 'that big one' or 'the last one in the circle'. On the other hand, if Claire did not use the rowing machine nor the cycling bike, these two form a plural individual that can for instance be referred to as 'the rowing machine and the cycling bike', 'the last two in the circle' or 'the ones she dislikes most'. Whichever description is used in the answer to the *wh*-question, any congruent answer refers to the referent that is identified by the context, the 'one or more machines that Claire did not use'. Hence, the referent is uniquely identifiable, and the question might be paraphrased by the identity question in (45), as in the case of the examples with specific *wh*-phrases (in Baunaz terms) discussed in Section 2.

(45) The machine or machines that you did not use – which is it or which are they?

We conclude that (44) is not a counterexample to our proposal and suggest that there is no need to assume the category 'Partitive' in Baunaz's hierarchy.

The current proposal has a number of important advantages over B/S's account. First, it accounts for more data. In contrast to B/S, our account explains the observed

variation in judgements among sentences containing the same intervener. Likewise, in contrast to B/S, it explains why a subset of speakers (Type A speakers in our terms) only accept *wh*-in-situ in a particular type of context, regardless of whether the question contains an intervener or not. Second, the current account explains the contextual effects found for *wh*-in-situ without assuming the presence of a [+specific] feature. The observed effects are accounted for by a felicity condition on the interpretation of the choice function, which needs to be recoverable for the interlocutor. Since the mechanism of a choice function is directly related to in-situeness, the semantic effects are expected to occur for in-situ *wh*-phrases only. In B/S'z account, it is not clear why in-situ but not fronted *wh*-phrases exhibit the proposed feature hierarchy. Cross-linguistically, specificity correlates with movement. Both in Turkish (Enç 1991) and in Germanic languages (De Hoop 1992, among others), specific noun phrases typically undergo scrambling or object shift, while non-specific noun phrases do not. The presence of a feature [+specific], as proposed by B/S, is therefore not expected to correlate with in-situeness. Finally, given the 'Intervention effects avoidance generalisation' as stated in (16), we expect that the referent for the *wh*-phrase is recoverable in the context. Within the proposal of B/S, this descriptive generalisation should be an effect of the specificity of the *wh*-phrase, but it is not clear why specificity would have such an effect, given that specific noun phrases can be used in sentences with different types of focus-ground articulations.

6.2 Cross-linguistic look-ahead

In this last section, we turn to the cross-linguistic picture of *wh*-in-situ in *wh*-fronting languages. In what languages would choice function single *wh*-in-situ questions be expected to emerge? We expect that a *wh*-fronting language that has multiple *wh*-questions (such as English) can develop contextually restricted single *wh*-in-situ. Multiple *wh*-questions, with one fronted and one in-situ *wh*-expression, have two possible readings: single pair and pair-list. According to Dayal (2002), both choice functions and covert *wh*-movement are needed to derive these two readings. In multiple *wh*-questions, the choice function variable is unselectively bound by the existential quantifier introduced by the fronted *wh*-phrase. In the absence of a fronted *wh*-phrase, however, there is no binder within the sentence. We assume that in that case, contextual binding may become an option resulting in contextually restricted *wh*-in-situ.

   This expectation seems to be borne out. Several languages with multiple *wh*-questions have been reported to allow a restricted use of *wh*-in-situ, which is only acceptable in a specific set of contexts (Biezma 2018; Bobaljik and Wurmbrand 2015; Bolinger 1978; Ginzburg and Sag 2000; Jiménez 1997; Poschmann 2015; Roussou et al.

2014). These languages include English, German, Spanish, (Brazilian) Portuguese and Modern Greek.

We suggest that the generalisation presented in Section 2 for French also goes a long way towards analysing the contextual restrictions of *wh*-in-situ questions in English and German, which are described in detail in the literature. In (46) and (48), the referent for the *wh*-phrase is already established is the context, as illustrated by the identity questions in (47) and (49), respectively.

(46)   A: *I'm going to send the sourdough bread to the Southern Bakery,
              and the croissants to Barringers.*
         B: *I see, and the bagels you're going to send WHERE?*
              (Ginzburg and Sag 2000: 280, (65))

(47)   The place where you're going to send the bagels – what is it?

(48)   *Major, you want this stuff WHERE?*
         (Bobaljik and Wurmbrand 2015: 14, (2b))

(49)   The place where you want the stuff – what is it?

As with contextually restricted *wh*-in-situ in French, the acceptability of examples such as (46) and (48) seems to vary, with certain speakers being able to accept *wh*-in-situ more easily than others. Hence, the choice function account proposed for French may also be a promising direction of research for *wh*-in-situ in languages such as English and German. If this contextually restricted *wh*-in-situ is gradually used more freely, *wh*-in-situ in such languages might stand at the beginning of a similar language change as the one we proposed for French in Section 5. Future research will have to show whether the choice function analysis developed in this paper can be extended to other languages and whether the further development towards a system allowing covert movement in single *wh*-questions can also be observed for other languages than French.

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