(No) variation in the grammar of alternatives

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The paper reports the results of an in-depth crosslinguistic study of intervention effects and the grammar of alternatives in a typologically diverse sample of five languages: Palestinian Arabic (Afro-Asiatic, Semitic), Russian (Indo-European, Slavic), Samoan (Austronesian, Oceanic), Turkish (Altaic, Turkic), and Yoruba (Niger-Congo, Defoid). In all of these languages, we find an interesting asymmetry in that focus evaluation interrupts question evaluation and causes an intervention effect, but not vice versa. We take our data to inform the crosslinguistic analysis of two alternative-evaluating operators, the squiggle operator and the question operator. To capture the observed absence of variation, we propose two semantic universals: The squiggle operator unselectively evaluates all alternatives in its scope. The question operator, on the other hand, is selective.

Keywords: alternative semantics, focus, interrogatives, multiple questions, disjunctive questions, intervention effects, Baker ambiguities, crosslinguistic variation, fieldwork

Introduction

Research in formal semantics in the past decades has made substantial progress in identifying points of systematic variation across languages, for example in the area of how temporal-aspectual meanings are composed crosslinguistically (Matthewson 2006; Tonhauser 2011, 2015; Ogihara & Sharvit 2012; Cable 2013; Chen, Hohaus et al. 2017; Bochnak, Hohaus & Mucha 2019, among others) and in the area of comparison constructions (Beck, Oda & Sugisaki 2004; Beck, Krasikova et al. 2009; Bochnak 2013; Berezovskaya & Hohaus 2015; Bowler 2016; Deal & Hohaus 2019; Hohaus & Bochnak 2020; Berezovskaya 2020, and many

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more). Meanwhile, the quest for crosslinguistic semantic universals continues (Matthewson & von Fintel 2008; Beck to appear).

This paper contributes to this quest, and reports an interesting case of no variation: We present the results of an in-depth crosslinguistic study investigating the grammar of alternative evaluation. We concentrate on how alternatives are introduced and evaluated in the grammars of natural languages. The central research question addressed is whether the question operator *Q* and Rooth's (1992) focus-evaluating squiggle operator ~ are uniform across languages with respect to the way they evaluate alternatives, in particular whether they selectively or unselectively evaluate the alternatives introduced in their scope. To investigate this question, we elicited parallel data on intervention effects (Beck 1996, 2006, 2016) in five typologically diverse languages: Palestinian Arabic, Russian, Samoan, Turkish, and Yoruba.

The term "intervention effects" refers to an observation first discussed in Beck (1996) that the presence of certain lexical items in *wh*-in-situ questions causes them to become degraded. A German example of an intervention effect is shown in (1)[1] below, where the addition of the exclusive particle *nur* 'only' leads to ungrammaticality in an otherwise grammatical question like the one in (2).

(1) **Was glaubt nur Maria$_F$ wen Karl getroffen hat?*
what thinks only Maria who(ACC) Karl met has
Intended: 'Who does only Maria think Karl met?'
[Q_i [~ only [Maria_F thinks [$_{CP}$ who_i 1 [Karl met t_1]]]]]

(2) *Was glaubt Maria, wen Karl getroffen hat?*
what thinks Maria who(ACC) Karl met has
'Who does Maria think Karl met?'

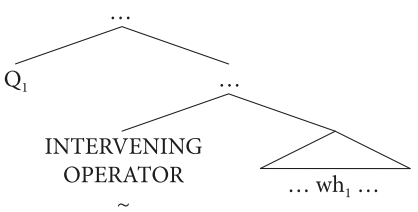
Intervention effects represent a key data point for understanding the grammar of alternatives because they provide information about how alternative-evaluating operators interact with one another. A number of proposals have been made to explain the pattern of intervention effects, which each delineate the phenomenon slightly differently (cf. Beck 1996, 2006; Pesetsky 2000; Haida 2007; Tomioka 2007; Mayr 2013, 2014). According to one prominent account of intervention effects (Beck 2006, 2016), they arise as the result of an unselective alternative-evaluating operator, such as the focus-evaluating ~-operator from Rooth (1992), blocking association with a focus or a *wh*-phrase that occurs in its scope, as in (3a). In the present paper, these are the phenomena we call intervention effects

1. Note that informants often do not judge intervention configurations as straight-up ungrammatical, but rather, as one anonymous reviewer phrased it, as difficult or impossible to interpret. We opt here for representing this judgment using the *.

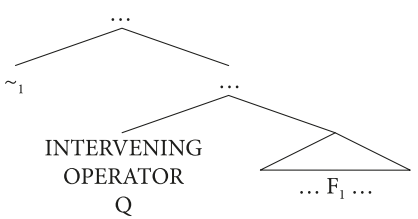
and which we discuss. We adopt the approach from Beck (2006, 2016). (Other types of analysis are discussed later in the paper). This analysis reveals a crosslinguistically stable pattern, which indicates the existence of two universals.

For the purposes of the discussion ahead, we will informally indicate association using numerical subscripts on *wh*-phrases or foci and on operators associating with them. A formal grammar will be introduced in Section 3. The results from the previous literature on intervention effects in English and other languages suggest that the ~-operator acts as an intervening (that is, association blocking) operator in configurations like (3a), exemplified in (4), whereas the question forming *Q*-operator in (3b) does not, as shown in (5).[2] Beck (2006) states that the intervention effect might be universal, but the pattern has yet to be tested systematically in a wider range of languages.

(3) a.



b.



(4) a. **Which student did only Karl*$_F$ *recommend which book to?*

b. [Q_i which$_i$ student 1 did [only ~ [Karl$_F$ recommend which$_i$ book to t_1]]]

c. [Q_i … [~[… wh$_i$ …]]]

d. Intended: 'What is the list of student/book pairs <x,y>
such that only Karl recommended the book y to the student x?'

e. Answers: *Only Karl recommended* Alias Grace *to Anna,*
Only Karl recommended The Blind Assassin *to Bill.…*

(5) a. *I only asked who likes durian*$_F$.

b. [only [~ [I asked [Q_i [who$_i$ 1 [t_1 likes durian$_F$]]]]]]

2. As indicated in (4d), the relevant reading of the multiple *wh*-question here is a pair-list reading, not a single-pair reading, which, similar to the echo-question interpretation, tends to be not affected by intervention effects.

c. [~ [… [Q [… F …]] …]]
   └──────────┘
d. 'I asked who likes durian, and for no other thing did I ask who likes it.'
e. Context where (5a) is true: I'm hosting a dinner party so I asked guests some questions to plan the meal. I asked "Who is vegetarian?", "What allergies does everyone have?", but I did not ask guests about whether or not they like specific foods with one exception: I did ask who likes durian because I know some people have very strong feelings about it.
f. Context where (5a) is false: I'm hosting a dinner party so I asked guests some questions to plan the meal. I asked "Who is vegetarian?", "Who likes durian?" and "Who likes papaya?".

Across all the languages in our sample we find that the presence of a focus-evaluating operator in a position at LF separating an alternative-introducing item (focus, *wh*-phrase or disjunction) from its associated evaluating operator leads to unacceptability, while the presence of a *Q*-operator in the same position does not. On the basis of these crosslinguistic data, we conclude that the squiggle is an unselective binder of alternatives in all languages of our sample and, furthermore, that in these languages, association with focus is always mediated by the squiggle. In addition, we provide evidence from the absence of intervention effects that the *Q*-operator selectively associates with alternatives introduced by a *wh*-pronoun in its scope. In all of these typologically mostly unrelated languages, the grammar of alternatives thus is implemented in a uniform fashion (unselective alternative evaluation by the squiggle, selective alternative evaluation by the *Q*-operator), although there are other logical possibilities.

Throughout the languages of the sample, we first verified that the elements used for testing associate with focus. In doing so, we abstracted away from the lexical peculiarities of the elements in question, and the analysis instead focused on the principles behind the grammar of alternatives. Under this view, intervention is not about the lexical content of a focus-sensitive element, it is about the grammar. We propose the following semantic universals:

(6) **Universal 1: Unselective Squiggle**
Universal 1a: **Association via Squiggle**
Focus evaluation is always mediated by the same focus-evaluating operator ~.
Universal 1b: **Unselective Association**
In all languages ~ is an unselective alternative-evaluating operator.

(7) **Universal 2: Selective *Q***
In all languages, the *Q*-operator associates with *wh*-items or disjunction in its scope selectively.

The structure of the paper is as follows: In Section 1, we present the core issue addressed by this paper. Section 2 presents the data from our crosslinguistic study, along with details about our elicitation methodology. Section 3 proposes a technical analysis of the crosslinguistic data employing a framework for alternative semantics that uses distinguished variables (see also Kratzer 1991; Wold 1996; Beck 2016) to model association with alternatives. Section 4 connects our analysis with the broader discussion of intervention effects and alternatives in the semantic literature. Finally, Section 5 is a discussion of our results and their contribution to our understanding of how alternative semantics can and cannot vary across the grammar of different languages. The Appendix provides detailed information on the data elicited in the five languages under investigation as well as German, for comparison.

1. The grammar of alternatives – Informal version

This section provides a brief introduction to the grammar of alternatives and outlines the core research question addressed by our study – namely the question to what extent the operators responsible for evaluating alternatives in questions and focus are subject to variation across languages. Section 1.1 is a non-technical introduction to the grammar of alternatives and alternative-evaluating operators, followed by an introduction to intervention effects in Section 1.2. Section 1.3 discusses how to use these effects to investigate the semantic properties of alternative-evaluating operators. Finally Section 1.4 discusses the question whether and to what extent the semantics of alternative-evaluating operators is subject to crosslinguistic variation.

1.1 Association with alternatives

Our investigation takes as a starting point the assumption that a semantic system for generating alternative sets in focus and interrogative constructions is part of the core compositional inventory of all languages (Zimmermann & Onea 2011). This semantic system has two basic components. The first is a class of items that cause alternatives to be introduced into the semantic composition including *wh*-items (Hamblin 1973) and focused elements (for which we assume that what introduces the alternatives is the F-feature they carry; Rooth 1985, 1992, 1996). Let's look at a couple of examples. The *wh*-phrase *who* and the focussed NP *Alex* in sentences (8a) and (8b), respectively, both evoke a set of alternatives, namely a subset of D_e, the domain of individuals (for the *wh*-phrase *who* this set is further reduced to the set of human individuals).

(8) a. *Who left?*
b. *Alex$_F$ left.*
c. Alternatives (Alt) to *who/ Alex*: {Alex, Beth, Cate, ...}

The second component of this system are the means of using sets of alternatives to derive particular interpretive effects. Following much of the theoretical work on alternative semantics, we model this component as a set of semantic operators which we will refer to as *alternative-evaluating operators*. In particular, this paper will concentrate on two such operators: The *Q*-operator, responsible for creating question meanings from the set of alternatives introduced by a *wh*-item, and the ~-operator proposed in Rooth (1992), which is responsible for ensuring that the set of alternatives introduced by focus is used by the linguistic context in which it occurs.

Coming back to the examples in (8a) and (8b), we assume that the LF-structure of these sentences each contain a covert operator, the *Q* and the ~ respectively, as illustrated in the LF sketches in (9a) and (9b).

(9) a. [Q_i [who_i left]]
b. [$\sim_C$ [$Alex_F$ left]]

The role of the *Q*-operator is to take the alternatives generated by the presence of one or more *wh*-items in its scope and use these to form the question meaning (Hamblin 1973; Beck 2006; Cable 2010). The ~-operator, on the other hand, takes the alternatives brought about by the foci in its scope and uses them to restrict the value of a free variable C to sets that are a subset of the alternatives generated by the focus. Focus-sensitive particles work with this free variable to determine their interpretation. For example, in (10), the exclusive particle *only* takes the (set-denoting) variable C as an argument and asserts that all alternatives in this set that are not entailed by *only*'s prejacent are false.[3] In this example, *only*'s prejacent is *Alex$_F$ left.* The set of alternatives to the prejacent are *Alex left, Beth left, Alex and Beth left, Cate left,* and so on. Of these alternatives, *Alex left* is entailed by the prejacent, so the sentence asserts that all of the other alternatives are false.

(10) a. *Only Alex$_F$ left.*
b. [only C_1 [~ C_1 [$Alex_F$ left]]]
c. [[only]] = $\lambda P.\, \lambda q.\, \forall p \in P\, [\, p = 1 \rightarrow q \subseteq p\,]$

3. This is a simplified semantics for *only*. For a more refined version, see Section 3.1.

1.2 Intervention effects

We have just sketched in broad strokes which key components are necessary for an alternative semantic system, but we have not tackled the question of how to implement alternative semantics in a compositional framework, nor looked at the semantic properties of association with focus. In particular, we did not specify whether alternative-evaluating operators like the ~-operator and the *Q*-operator associate selectively or unselectively with alternatives introduced in their scope. To illustrate the difference, consider the schematized LF in (11), where two alternative-introducing foci are located within the scope of an alternative-evaluating operator.

(11) [~ [Alex_{Fi} ate $\text{Anchovies}_{\text{Fii}}$]]

A selective alternative-evaluating operator would be able to pick out a particular alternative-introducing item or items in its scope, via co-indexing, and form alternative sets by replacing only the alternative-introducing item(s) that it is co-indexed with, as in (12) below.

(12) [$\sim_{\text{i}}$ [Alex_{Fi} ate $\text{anchovies}_{\text{Fii}}$]]
Alt: {*Alex ate anchovies, Beth ate anchovies, Cate ate anchovies, …*}

An unselective alternative-evaluating operator could only form a set of alternatives by replacing *all* alternatives introducing items in its scope, as in (13).

(13) [~ [Alex_{Fi} ate $\text{anchovies}_{\text{Fii}}$]]
Alt: {*Alex ate anchovies, Beth ate anchovies, Alex ate bananas, Beth ate bananas, …*}

These two types of alternative-evaluating operators correspond to different technical implementations of alternative semantics that have been proposed in previous literature: Rooth (1985, 1992) works within a system where all alternative-evaluating operators are obligatorily unselective, whereas Kratzer (1991), Wold (1996) and Beck (2006) have argued for a framework that allows for selective alternative-evaluating operators. Whether alternative-evaluating operators associate selectively or unselectively makes predictions about the way in which these operators interact with each other in structures that contain multiple stacked alternative-evaluating operators. We will refer to these structures as *intervention configurations*. There is disagreement in the literature regarding the precise delineation of the phenomenon of intervention effects and its explanation (see Beck 1996, 2006; Pesetsky 2000; Haida 2007; Tomioka 2007; Mayr 2013, 2014), but we use it here to mean the effect that arises in configurations in which an alternative-evaluating operator intervenes at Logical Form between another

alternative-evaluating operator and its associate (Beck 2006, 2016). Given the alternative-evaluating operators we have discussed above, ~ and *Q*, we can identify four such configurations:

(14) a. Association with *Q* across ~
[Q_i [... [~ [... wh_i ... F...]] ...]]
Which student did only Karl$_F$ recommend which book to?

b. Association with *Q* across *Q* (= Baker ambiguities)
[Q_i [... [Q_{ii} [... wh_{ii} ... wh_i ...]] ...]]
Who knows where we bought what?
For which person-thing pairs <x,y>: x knows where we bought y?
Possible answers: *Armin knows where we bought bread,*
Bernhard knows where we bought cheese, ...

c. Association with ~ across *Q*
[~ [... [Q_i [... wh_i ... F ...]] ...]]
I only asked who likes durian$_F$.

d. Association with ~ across ~ (multiple focus)
[~ [... [~ [... F ... F ...]] ...]]
I also only introduced Marilyn$_F$ to Ted$_F$.

An unselective alternative-evaluating operator should disallow association of a higher alternative-evaluating operator with its alternative trigger when it intervenes between said operator and its associated focus or *wh*-item at Logical Form. Selective operators, on the other hand, are not predicted to cause this kind of intervention effect. Thus, to test the selectivity properties of *Q* and ~ crosslinguistically, we can use the presence or absence of intervention effects in configurations where either a *Q*-operator or squiggle intervenes between a different *Q* or a squiggle and its associate as diagnostic tests.

1.3 Other associations with *Q*

Due to language-specific syntactic restrictions, testing for intervention of the kind seen in (14a) might not be possible relying on in-situ *wh*-phrases. Several subtypes of the configuration in (14a) are however still available in that case: Beyond testing in-situ *wh*-phrases, either in simple or multiple questions, two additional question types have been argued to be relevant, and were used in our crosslinguistic study. The first, scope-marking questions, are a type of long distance *wh*-question strategy characterized by partial movement of a *wh*-phrase within an embedded clause and insertion of an additional question particle in the matrix clause marking the scope of the question. An example from German is given in (15). One possible analysis of (15a) is in (15b): The *wh*-phrase's position at LF is

in the specifier of the embedded clause (i.e., its overt position), while the 'scope marker' is a semantically vacuous particle marking the position of the *Q*-operator.

(15) a. *Was glaubt Maria, wen Karl getroffen hat?*
what thinks Maria who(ACC) Karl met has
'Who does Maria think Karl met?'
b. [Q_i [Maria thinks [$_{CP}$ who_i 1 [Karl met t_1]]]]

Although the *wh*-phrase undergoes partial movement in scope-marking questions, it is still in a position low enough to be subject to intervention effects from a focus-sensitive particle located in the matrix clause, as in (16). Thus scope-marking questions provide an additional environment for testing intervention effects. Intervention effects in scope-marking questions have been observed and analyzed for German in Beck (1996, 2006).

(16) a. **Was glaubt nur Maria$_F$ wen Karl getroffen hat?*
what thinks only Maria who(ACC) Karl met has
Intended: 'Who does only Maria think Karl met?'
b. [Q_i [~ only [$Maria_F$ thinks [$_{CP}$ who_i 1 [Karl met t_1]]]]]

The second additional question type that is relevant to the search for intervention effects are alternative questions. Alternative questions are questions containing a disjunction that are interpreted as a request for the hearer to choose between two mutually exclusive disjuncts. An example is given in (17). A prominent strand of analyses of alternative questions (von Stechow 1991; Beck & Kim 2006; Biezma & Rawlins 2015) treats the disjunction as an alternative-introducing item, similar to a *wh*-phrase except that the set of alternatives is limited to the two disjuncts. Under these analyses, the alternatives introduced by disjunction are evaluated by a *Q*-operator, in parallel to the alternatives that *wh*-items introduce. An LF for this type of analysis is sketched in (17b). (Note that not all semantic accounts of the way alternatives from disjunction are introduced and manipulated maintain such a straightforward parallel between *wh*-phrases and disjunction. We will not address these alternative analyses here; see Alonso-Ovalle 2006; Uegaki 2014; Ciardelli, Groenendijk, and Roelofsen 2017, and references therein).

(17) a. *Did Mary teach Syntax$_F$ or Semantics$_F$?*
'Which of Syntax or Semantics did Mary teach?'
Alt: {*Mary taught Syntax, Mary taught Semantics*}
b. [Q_i [Mary taught [$_{DisjP}$ Syntax or$_i$ Semantics]]]

Under this account of alternative questions, the disjunction remains in situ at LF and it is possible to create intervention configurations where the disjunction is separated from its associated *Q* by a focus-evaluating operator, as in (18). Because

disjunctive questions are ambiguous between an alternative-question (18c) and a polar-question (yes/no) reading (18d), in these examples, intervention is not predicted to cause outright ungrammaticality but rather block the alternative question reading. Beck & Kim (2006) report the occurrence of focus intervention effects in alternative questions in a number of languages including English, Korean and German.

(18) a. *Did only Mary$_F$ teach Syntax or Semantics?*
b. [Q [only ~ [Mary$_F$ taught [$_{DisjP}$ Syntax or Semantics]]]]
c. #'Which of the two courses (Syntax or Semantics) did only Mary teach?'
d. 'Is it true that only Mary taught one of these two courses?'

To summarize, we have now identified a list of possible configurations where we can test for intervention effects. Furthermore, the presence or absence of intervention effects in these configurations has been argued to be linked to the binding properties of the alternative-evaluating operators ~ and *Q*.

1.4 Crosslinguistic variation in the grammar of alternatives

Initial data from the literature on English and German indicate that while the question operator appears to allow for association across it, the squiggle does not. Before we consider the broader crosslinguistic picture, let us look first at the available data and the claims made about intervention configurations for English and German.

Regarding intervention by the ~-operator, previous work from English, German and a number of other languages suggests that association of a *wh*-item or disjunction with *Q* across a ~ (configuration 14a) is generally not possible (*modulo* the possibility of covert movement; see Beck 2006; Beck & Kim 2006; Pesetsky 2000 for discussion).

(19) Association with *Q* across ~
a. ??*Who said that only Mary$_F$ saw who?* (Beck 2006: p. 9, no. (24a))
b. **Wer hat sogar Sabine$_F$ wem vorgestellt?*
who has SCL Sabine whom introduced
'Who did even Sabine$_F$ introduce to whom?'
c. *[Q$_i$ [who$_i$ 1 [t$_1$ said [that only C [~$_{ii}$ C Mary$_{Fii}$ saw who$_i$]]]]]

When it comes to association with ~ across another ~ (configuration 14d), judgements reported in the literature on these types of constructions differ (Wold 1996; Rooth 1996; Krifka 1992, 2006 report acceptable judgements, while experimental results reported in Beck & Vasishth 2009 suggest that these constructions are degraded). For these examples, Beck & Vasishth (2009) argue that the subtle

nature of these examples calls for quantitative experimental results rather than judgments about intuitions. In addition, all authors of this paper involved in elicitation experiments observed that the judgements provided by speakers for multiple focus constructions were unreliable and provided little data that could be used to draw a conclusion about these constructions, one way or another. For this reason, we will leave further investigation of these configurations to future work.

Regarding the *Q*-operator, the available data from English and German suggest that *Q* does not cause intervention effects. Baker ambiguities (configuration 14b) are widely reported for English and German (Baker 1968, 1970; Dayal 1996; Beck 2016), suggesting that no intervention takes place in these constructions. An example is in (20), which is ambiguous between the interpretation as a single *wh*-question in (20a) and the multiple question interpretation in (20b), here referred to as Baker interpretation. It is the latter that is relevant here as it requires a *wh*-phrase to associate with a higher *Q*-operator from within the scope of a lower one, as sketched in (20c). Crucially, the lower *Q*-operator does not disrupt such an association.

(20) Association with *Q* across *Q*
   a. *Wer weiß, wo wir was gekauft haben?*
      who knows where we what bought have
      'Who knows where we bought what?'
   b. Who knows the answer to the question: Where did we buy what? (non-Baker)
   c. For which person-thing pairs <x,y>: x knows where we bought y? (Baker)
   d. [Q_i [who_i 1 [t_1 knows [Q_{ii} [$where_{ii}$ we bought $what_i$]]]]]

Examples of association with focus across a question are also widely reported in the literature and judged to be acceptable (configuration 14c). A relevant example from German is repeated in (21) below.

(21) Association with ~ across *Q*
   a. *Ich habe nur gefragt, wer Durian$_F$ mag.*
      I have EXCL asked who durian likes
      'I only asked who likes durian$_F$.'
   b. [only C [$\sim_{ii}$ C I asked [Q_i [who_i likes $durian_{Fii}$]]]]

There is, however, no theory-internal reason for assuming that all languages should follow the pattern of English and German when it comes to intervention effects. Research on intervention effects of the type in (14a) has provided evidence that the phenomenon is, at the very least, widespread crosslinguistically. These effects have been observed for a wide range of languages including Korean, Hindi and Turkish (Beck 1996), Dutch (Honcoop 1998), Japanese and French (Pesetsky

2000), Passamaquoddy (Bruening & Lin 2001), Mandarin and Malayalam (Kim 2002), Thai (Ruangjaroon 2002), and Amharic (Eilam 2011).[4] Beck (2006) conjectures on the basis of this crosslinguistic evidence that intervention effects are universal. But it is important to note that first, the literature on intervention does not usually consider the entire paradigm described in (14a–d). Second, it does not usually provide evidence that the ~ is the problematic intervener. The intervention effect is observed for lexical items like negation, nominal or adverbial quantifiers or focus-sensitive particles, without a detailed study of the properties of these expressions. Thus, there is a gap between the observed data and the analysis in terms of intervention of an unselective ~. To our knowledge, no in-depth crosslinguistic study has been carried out exploring the extent to which the grammar of alternative-evaluating operators, including both the squiggle operator ~ and the question operator *Q*, are subject to crosslinguistic variation. The goal of this paper is to contribute precisely such a study, by systematically comparing intervention behavior in a theory guided way across a range of typologically unrelated languages. The research questions this study aims to answer are the following:

A. Is the ~ employed crosslinguistically for focus evaluation?
B. Are configurations that have ~ intervening between *Q* and its associate (configuration 14a) crosslinguistically (un-)acceptable?
C. Are configurations that have *Q* intervening between ~ or another *Q* and its associate (configurations 14b,c) crosslinguistically (un-)acceptable?

We will conclude that the ~ is employed crosslinguistically for focus evaluation and that configurations with ~ intervening between *Q* and its associate are unacceptable. Furthermore, we will conclude that *Q* does not behave like ~ in that regard, as configurations in which *Q* intervenes between ~ or another instance of *Q* and their associate are acceptable.

4. Eilam (2011) observes intervention with Negative Polarity Items but not with focus-sensitive particles. Their data sometimes gets reported as Amharic not having intervention effects. But note that variation w.r.t. the set of elements that cause an intervention effect has been observed earlier (e.g., in Beck 1996 for Korean *vs* German), and that Eilam (2011) does in fact find intervention effects with a subset of the potentially problematic interveners.

2. The data from the crosslinguistic study

This section presents our data on intervention effects in the five languages of our sample. In Section 2.1, we start with a discussion of the parallel elicitation methodology followed for each of the languages. Section 2.2 then presents the core data language by language. Section 2.3 summarizes the empirical results.

2.1 Methodology

Our language sample includes the five languages listed in Table 1 below. Among them, four are under-represented in semantics research. For each of the five languages, we carried out extensive original fieldwork. We additionally considered the data already available in the literature on German and English, languages for which the most data is available and for which we benefitted from our intuitions as native speakers. In these two languages, as we saw in the previous section, the available data from the literature indicate that the alternative-evaluating ~-operator causes intervention effects while the interrogative *Q*-operator does not.

Table 1. Language sample

Language	Family and genus	Under-represented?
Palestinian Arabic	Afro-Asiatic, Semitic	x
Russian	Indo-European, Slavic	
Samoan	Austronesian, Oceanic	x
Turkish	Altaic	x
Yoruba	Niger-Congo, Defoid	x

Languages were selected on the basis of accessibility of native speaker consultants and existing research ties to the language communities. Rather than striving for a larger, typologically balanced sample that one could necessarily just survey superficially, our results are based on a smaller number of languages for which a substantial amount of data was elicited and complemented by in-depth syntactic and semantic analysis. In this respect, the current study is modelled after Beck, Krasikova et al.'s (2009) study of crosslinguistic variation in the syntax and semantics of comparison constructions, as well as Baker (2010), which also searches for language universals at a rather high level of abstraction.

All data were elicited from native speaker consultants of the respective languages following the methodology outlined in Matthewson (2004, 2011). Data

collection included examples from corpora, translation tasks and acceptability judgment ratings. For acceptability judgement tasks, data were always elicited with accompanying contexts. For the most part, we have not included these contexts in the paper to improve readability. A selection of example sentences together with their elicitation contexts is provided in the Appendix. The Appendix also provides a concise summary of the results for each of the five languages for which elicitation was carried out as well as for German, where data were based on native speaker intuitions of the authors.

Table 2. Numbers of speakers consulted

Language	# of language consultants	Notes
Palestinian Arabic	12 consultants	Data collected between 2014 and 2017. Two consultants were bilingual (Palestinian Arabic, German). All informants were between 20 and 30 years old.
Russian	6 consultants	Data collected between 2014 and 2017. All consultants were native speakers. Three of these speakers come from Saint-Petersburg, one from Crimea, one from Moscow and one from Archangelsk. The consultants were female, aged between 25 and 90 years.
Samoan	39 consultants	Data collected over three fieldwork trips between 2014 and 2017 by two of the authors. Three language consultants were based in Hawaii, and another 11 in New Zealand. All consultants were bilingual (Samoan, English).
Turkish	5 primary consultants + 134 participants in the acceptability ratings studies in Durmaz (2016, 2017).	Data collected between 2016 and 2019. All speakers were bilingual (Turkish, German), and self-identified as native speakers of Turkish and as proficient speakers of German.
Yoruba	15 consultants	Data was collected between 2014 and 2018 on an ongoing basis with consultants living in Germany, USA and the UK. All consultants grew up in Nigeria and self-identified as Yoruba native speakers. All speakers were bilingual (Yoruba, English).

In order to gain comparable sets of data, we followed a three-step elicitation procedure for each of the languages. In a first step (Step 1 Preliminaries), we elicited and analyzed a baseline data set for the purpose of understanding how the language forms questions and whether focus is marked prosodically, phonologically or syntactically. Crucially, in this step we also identified the overt

alternative-sensitive operators of the language, in particular exclusive, scalar and additive focus particles (see also Renans, Zimmermann & Greif 2011 for relevant elicitation material). This is essential, as it avoids using elements that seem to be equivalents to known alternative-sensitive operators on a lexical level, but use different underlying machinery. One example for such an element could be Japanese *dake* 'only', which, as the experimental data presented in Kitagawa et al. (2013) suggests, is not an intervener. This is not surprising given the analysis of *dake* in Tomioka (2017), where it is argued that *dake* does not quantify over alternatives, but instead creates a maximal entity. Thus, while it is a translational equivalent of English exclusive *only,* Japanese *dake* is not its grammatical equivalent; it is not an alternative-sensitive operator, but more similar to a definite plural. As pointed out above, our investigation is not about the lexical content of the alternative-sensitive item, it is about the grammatical architecture for alternatives.

Building on these preliminaries, we checked the structural prerequisites for intervention configurations in the language (Step 2 Structural Prerequisites). The intervention configurations sketched in Section 2 all require that the lexical item that introduces the alternatives can be separated at LF from the alternative-evaluating operator that associates with it. For example, in order to test for intervention effects in *wh*-questions in some language, the language needs to provide a grammatical configuration where a *wh*-item occurs in a position not immediately adjacent to its evaluating *Q*-operator in the first place. Otherwise, any resulting ungrammaticality that results from adding a focus-sensitive operator may be due to independent syntactic restrictions on the position of *wh*-items in that language. In the same way, to test for association with focus across an embedded question, for example, the language needs to have a focus-sensitive operator that can associate with foci in constituents that are not immediately adjacent to them. Otherwise, the ungrammaticality of the relevant intervention configuration could stem from syntactic requirements on focus particles rather than on the semantic properties of the alternative-evaluating operator. For each of the languages in the sample, we therefore tested for the following two structural prerequisites:

> First, does the language allow association between a proposition-level question operator and a *wh*-item or disjunction at a distance, as in (22)? If so, under which circumstances is this possible? Depending on the language, relevant constructions may include in-situ *wh*-phrases either in simple *wh*-questions or multiple questions like (22b), as well as scope-marking questions and disjunctive questions.

(22) a. [Q_i [... wh_i / or_i ...]]
b. *Who read which book?*
[**Q** who [$_{VP}$ read **which book**]]

Second, is focus association at a distance possible, as in (23)? If so, which focus-sensitive particles allow for association with focus at a distance and what (if any) are the syntactic and semantic restrictions affecting focus association?

(23) a. [$\sim_i$ [... F_i ...]]
b. *Alex only said that Beate invited Cate$_F$.*
[**only** ~ [Alex said [$_{CP}$ that Beate invited **Cate$_F$**]]]

In the constructions where these structural prerequisites were met, in a final step, we tested for acceptability in intervention configurations with an intervening ~-operator (configuration 14a), as in (24), and with an intervening *Q*-operator (configurations 14b,c), as in (25).

(24) Intervention by squiggle operator
a. [Q_i [... [$\sim_{ii}$ [... wh_i ... F_{ii} ...]] ...]]
b. [Q_i [... [$\sim_{ii}$ ... [... [NP or_i NP] ... F_{ii} ...]] ...]]

(25) Intervention by question operator
a. [$\sim_i$ [... [Q_{ii} [... wh_{ii} ... F_i ...]] ...]]
b. [Q_i [... [Q_{ii} [... wh_{ii} ... wh_i ...]] ...]]

2.2 The crosslinguistic data

The results of the elicitation are presented language by language below. We find that language-specific facts related to focus marking and question formation across the different languages of the sample as well as lexical particularities of focus-sensitive items lead to a varied range of constructions in which it is possible to test for intervention effects. For each of the languages, we therefore first provide a brief sketch of the considerations that determined which constructions were used to test for intervention (under the heading "Preliminaries and Structural Prerequisites"), and briefly survey question formation, focus-marking strategies and some of the focus-sensitive particles in the language. We then move on to discuss intervention effects (under the heading "Intervention Data"), where we first discuss intervention by the squiggle operator, and then intervention by the question operator.

Despite the variation observed in the first two steps of elicitation (the preliminaries and structural prerequisites), the overall pattern observed in each of the languages is the same: Our data show that, parallel to the previous observa-

tions from English and German, across the different intervention configurations, focus-sensitive operators cause intervention effects while intervening *Q*-operators do not. An overall summary of the results is provided in Section 2.3, after the language-by-language discussion.

2.2.1 *Palestinian Arabic*

Preliminaries and structural prerequisites
In Palestinian Arabic, *wh*-questions are formed via *wh*-fronting as shown in (26), or via scope marking in long distance questions, as in (27).

(26) *miin shaayif al-walad?*
who sees the-boy
'Whom does the boy see?'

(27) *shu bitfakir samira, miin baas jooz-ha?*
what thinks Samira who kissed husband-her
'What does Samira think who her husband kissed?'

Multiple questions were judged ungrammatical by native speakers, regardless of the position of the two *wh*-items, as exemplified in (28).

(28) **miin shaaf ʿay Haywaan?*
who saw which animal
'Who saw which animal?'

In alternative questions, the disjunction remains in situ. However, unlike English and German, separate disjunction particles are employed for alternative and polar (yes/no) disjunctive questions (see also Winans 2019). The consequences for testing intervention in questions are the following: Firstly, intervention effects of the type in (14a) can be tested in long-distance scope-marking questions and in alternative questions. Secondly, intervention by *Q* in questions (Baker ambiguities) cannot be tested in Palestinian Arabic, due to the absence of multiple questions. Regarding focus, we found that focus is marked prosodically in Palestinian Arabic, and the focus-sensitive exclusive particle *bas* is able to associate with focus at a distance, providing an environment to test for intervention by *Q* and ~ in focus constructions.

Intervention data
Intervention effects (configuration 14a) were observed in Palestinian Arabic both in alternative questions and in scope-marking questions. The minimal pair in (29) shows that the addition of a focus-sensitive particle to an otherwise grammatical alternative question leads to degraded acceptability. Recall that Palestinian Arabic

employs different disjunctive particles in polar (yes/no) and alternative questions, so unlike in English, the polar-question meaning is not available in intervention configurations.

(29) a. *'akal mahmuud maqluubi walla shirib shaay?*
ate Mahmud maqlubi or drank tea
'Did Mahmud eat maqlubi or drink tea?'
b. **bas mahmuud 'akal maqluubi walla shirib shaay?*[5]
EXCL Mahmud ate maqlubi or drank tea
'Did only Mahmud eat maqlubi or drink tea?'

The pair of sentences in (30) illustrates that the addition of a focus-sensitive particle in an intervening position within a scope-marking question results in a marked structure, with some variability in judgment (see also Braun 2018).

(30) a. *shu bitfakir imm-ha ma3 miin Hakat maram?*
what thinks mother-her with who spoke Maram
'Who does her mother think Maram has spoken to?'
b. *??shu bitfakir bas bint chaalt-i ma3 miin Hakat maram?*
what thinks EXCL daughter aunt-my with who spoke Maram
'Who does only her cousin think Maram has spoken to?'

For a more detailed discussion of intervention effects in Palestinian Arabic, the reader is referred to Braun (2016, 2018).

No intervention effects by the interrogative *Q*-operator (configuration 14b) were observed in Palestinian Arabic. Association with a focus particle across a *wh*-question boundary (configuration 14c) could be tested and was judged acceptable by consultants. An example of association across an embedded question is in (31); see also Example (14) in the section on Palestinian Arabic in the Appendix.

(31) *monaa bas sa'ala-t ween al-matHaf*$_{F.}$
Mona EXCL asked where the-museum
'Mona only asked where the museum$_{F}$ is.'

Based on data like the ones in (29) to (31), we conclude that in Palestinian Arabic, the ~-operator causes intervention effects, while the *Q*-operator does not.

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5. The word order in (29a) and (29b) cannot be made more parallel because, in non-*wh*-questions, the focus-sensitive particle *bas* always needs to be fronted. A simple polar question example is in (i) below.

(i) *bas mahmuud 'akal maqluubi?*
EXCL Mahmud ate(3SG.MASC) maqlubi
'Did only Mahmud eat Maqlubi?'

2.2.2 *Russian*

Preliminaries and structural prerequisites

Russian *wh*-interrogatives are formed via fronting. In multiple questions typically all *wh*-phrases are fronted (see also e.g. Rudin 1988; Stepanov 1998; Bošković 2002), so, unlike English, ordinarily multiple questions do not yield the required LF configurations for testing intervention. However, during elicitation, we found that in embedded *wh*-questions the multiple *wh*-fronting requirement is relaxed, and in-situ *wh*-phrases were accepted by some consultants, allowing us to use these to test for intervention in these environments (see also Berezovskaya & Howell 2020); this is illustrated in Example (3) in the section on Russian in the Appendix. Alternative questions provide a second configuration to test for intervention effects (configuration 14a). Scope-marking strategies were not accepted by our consultants and were not used to test intervention.

Focus is primarily marked via intonation in Russian, although as a language with relatively free word order, there is an interaction between focus marking and syntactic position to some extent (cf. Bailyn 2012). We identified several focus-sensitive operators, among them the exclusive particle *tol'ko*. Association with focus at a distance was found to be possible only with *tol'ko* (as shown in (8) in the section on Russian in the Appendix), providing a suitable configuration for testing intervention in focus constructions (configurations 14b,c).

In sum, we found that for Russian, embedded multiple questions and alternative questions provided a good environment to test for intervention by ~ (configuration 14a). Embedded multiple questions also allowed to test for intervention by *Q* and thus Baker ambiguities (configuration 14b), and focus association with the exclusive particle *tol'ko* provides the right environment to test for intervention by *Q* in a focus construction (configuration 14c).

Intervention data

The environments in which it is possible to test for intervention by ~, disjunctive questions and embedded multiple questions, reveal that the presence of a focus-evaluating operator in an intervention position leads to unacceptability. The sentence pair in (32) shows that the intervention of a focus-sensitive operator between an embedded in-situ *wh*-phrase and its associated *Q* causes a degradation in acceptability (for the elicitation context, see Example (11) of the section on Russian in the Appendix). This intervention configuration was of course only tested with those speakers who accepted leaving one *wh*-word in situ as in (32a) to ensure that the degradedness of the sentence is due to the intervention and not to the structural choice of leaving a *wh*-word in situ. The example in (33) shows a similar intervention effect observed in an alternative question.

(32) a. %*Masha znaet komu Nadja čto podarila.*
Masha knows who(DAT) Nadja what(ACC) offered
'Masha knows whom Nadja offered what.'
b. **Masha znaet komu tol'ko Nadja*$_F$ *čto podarila.*
Masha knows who(DAT) EXCL Nadja what(ACC) offered
'Masha knows whom only Nadja$_F$ offered what.'

(33) a. *Tol'ko Katja*$_F$ *poedet v Moskvu ili (v) Peterburg?*
EXCL Katja go(FUT) to Moscow or (to) Petersburg
'Will only Katja$_F$ go to Moscow or St. Petersburg?'
b. (Im)possible anwers: # *V Moskvu./V Peterburg.*
('To Moscow.'/ 'To Petersburg.')
Da./ Net. ('Yes.'/ 'No.')

Another example for intervention in alternative questions is provided in (12) in the section on Russian in the Appendix.

We were able to test for intervention by *Q* in both Baker-questions and in cases of association with *tol'ko* across an embedded question. These two data points were accepted by native speakers, suggesting that the presence of an intervening *Q*-operator in Russian does not cause an intervention effect. The example in (34) shows grammatical association with focus across *Q* into an embedded interrogative and (35) shows that the multiple matrix question reading of Baker sentences is available in Russian, (35b). (For the elicitation context for (35b), see (14) in the section on Russian in the Appendix.)

(34) a. Context: Masha is doing a study on the voting patterns of students. At a party, she meets Petja, Borja and Sonja. Of the three, Petja is the only student, so…
b. *Masha tol'ko sprosila,* [Q *za kogo progolosoval Petja*$_F$*].*
Masha EXCL asked for who(ACC) voted Petja
'Masha only asked who Petja$_F$ voted for.'

(35) *Kto znaet gde my čto kupili?*
who knows where we what(ACC) bought
'Who knows where we bought what?'
a. 'For which person x: x knows where we bought what?'
b. 'For which person x and thing y: x knows where we bought y?'

Taken together the data points exemplified in (32) to (35) indicate that the focus-evaluating ~-operator in Russian causes intervention effects while *Q* does not. For a detailed discussion of the tested configurations and intervention effects in Russian, we refer the interested reader to Berezovskaya & Howell (2020).

2.2.3 *Samoan*

Preliminaries and structural prerequisites

Samoan is an isolating, analytic verb-initial language, with a preference for VSO as the basic surface word order (see the Samoan section of the Appendix for further background information on the language and references). Interrogatives in Samoan are formed via fronting of a *wh*-phrase and the particle *ʻo*, as shown in (36). Following Hohaus & Howell (2015), we analyze the particle *ʻo* as marking those constituents which introduce alternatives into the semantic composition (hence also the glossing). *Wh*-fronting is obligatory in Samoan, as can be gathered from (36b), which rules out simple *wh*-questions as a testing environment for intervention effects.

(36) a. [From the TFS "The Beekeeper" storyboard:[6]]
[ʻO ai] le pi e galue malosi __?
ALT who the bee TAM work hard
'Who is the bee that works the hardest?'

b. **E galue malosi [(ʻo) le ai le pi]?*
TAM work hard ALT the who the bee
Intended: 'Who is the bee that works the hardest?'

c. *[ʻO ā meaʻai] na ʻaumai e Pita __?*
ALT what thing+eat TAM(past) bring ERG Peter
'Which food did Peter bring?'
(For the elicitation context, see (1) in the section on Samoan in the Appendix.)

Samoan does not allow for multiple *wh*-questions, whether *wh*-phrases are fronted, as in (37), or left in situ (see the Appendix for further examples). The lack of grammatical multiple questions thus prevents testing for Baker ambiguities.

(37) **[ʻO a mea] na faʻatau [e (ʻo) ai] __?*
ALT what thing TAM(past) buy ERG ALT who
Intended: 'Who bought what?'

An example of a disjunctive question in Samoan is in (38); the disjunction may however also be fronted. Disjunctive questions may receive both a polar and alternative interpretation (see also Hohaus & Howell 2015), and thus constitute an environment in which we can test for intervention (configuration 14a) as the rele-

6. Kieran Dorreen, Sarah van Eyndhoven, Clare Li, Jennifer Middendorf, Naomay Jibe Tor, Vera Hohaus & Heidi Quinn (2018), "The Beekeeper", The Fieldwork Hub (URL: <https://fieldworkhub.wordpress.com/storyboards/>, last accessed 2nd November 2020).

vant configurations are not ruled out for independent syntactic reasons (as would be the case for simple and multiple *wh*-questions).

(38) a. *Na fa'atau e Ese [le tusi po'o le lavalava]?*
TAM(past) buy ERG Ese the book or+ALT the lavalava
'Did Ese buy the book or the lavalava?'
b. (Yes./ No.) (The book./ The lavalava.)
(For the elicitation context, see (4) in the section on Samoan in the Appendix.)

Focus in Samoan can be marked either morpho-syntactically (via fronting and *'o*-marking), as in (39), which constitutes a question-answer pair with (36a), or via prosodic prominence. (The latter focus-marking strategy is argued in Calhoun (2017) to be a recent development in the language.)

(39) *['O le pi lanusamsama] e galue malosi* __.
ALT the bee color+yellow TAM work hard
'The yellow bee works the hardest.'

Lexical items that are focus-sensitive and rely on alternatives in their interpretation include the scalar verb *o'o* 'to reach', 'even', the negation verb *le'o,* and the exclusive particle *na'o* 'only', on which we concentrate here (the Samoan section of the Appendix contains further examples). The exclusive particle carries the syntactic requirement that its sister constituent be an NP containing its associated focus within it. However, it is possible to separate the exclusive *na'o* from its associated focus within the larger nominal sister constituent, as in (40) below. Note that this is also an example where focus association happens across a relative clause island (on the latter, see Hohaus 2015: 135–139). Combined with the ability to embed questions under certain nominals in Samoan, this creates the right kind of condition to test for association with focus across a *Q*-operator and thus test for intervention by *Q* (configuration 14c); see Examples (43) and (44) below.

(40) a. Context: Sina is very well informed. She is always the first to know who has asked whom on a date, and who is in love with whom. That's why shortly after three girls move to town, some of the boys in the village ask Sina whether she has any information about the new girls. She answers:
b. *Na 'o le tagata lava [e alofa i ai Malia$_F$] ou te iloa.*
EXCL ALT the person very TAM love PREP PRN Mary I TAM know
'I only know the very person who Mary$_F$ loves.'

Although the range of constructions that can be used to test for intervention is thus more restricted in Samoan than in the languages considered so far, both prerequisites for testing intervention are met: Alternative questions provide the right

environment to test for intervention effects in questions, and association with focus across an intervening *Q*-operator can be tested in configurations like (41), where a narrow focus is contained inside a question embedded by a noun.

(41) $[_{\text{matrix clause}} \dots [\ \text{EXCL}\ [_{\text{noun phrase}}\ [_{\text{embedded question}} \dots \text{F} \dots]\ ]\ ]\ \dots]$

Intervention configurations

The results of testing intervention by ~ in Samoan alternative questions suggest that here, too, the ~-operator causes ungrammaticality in the relevant LF position. In the disjunctive question in (42), an exclusive particle separates the disjunction from the matrix level interrogative operator. Native speakers judge this sentence acceptable only with a polar-question interpretation, and reject it when paired with an alternative-question interpretation (see the section on Samoan in the Appendix for another example, where we also provide the elicitation context). Without the exclusive particle *na'o,* the alternative-question interpretation is available, and the question judged acceptable in a context that sets up this interpretation.

(42) *Sa alu na 'o Tupe i [Faleolo po'o Falealili]?*
TAM(past) go EXCL ALT Tupe to Faleolo or Falealili
a. *'Which of Faleolo or Falealili did only Tupe go to?'
b. 'Did only Tupe go to one of the two places Faleolo and Falealili?'

Evidence that the *Q*-operator does not cause intervention effects comes from examples of association with focus from inside an embedded question, as in Examples (43) and (44).

(43) a. Context: During a crime investigation, the police were interested in two questions: Who noticed a certain boat and who noticed a certain car. But there have been developments and there's just one questions now that matters, as the police is no longer interested in the boat.
b. *E tauā na'o le fesili [pe 'o ai sā iloa atu le ta'avale$_F$].*
TAM vital EXCL+ALT the question Q ALT who TAM(past) notice DIR the car
'Only the question who noticed the car$_F$ matters.'
(Repeated from (11) in the section on Samoan in the Appendix.)

(44) a. Context: Mareko has taken a fancy to Malia. There's a party next week and for him there is just one question that matters:
b. *E tauā na'o le fesili [pe 'o le'ā sau Malia$_F$ i le pati].*
TAM vital EXCL+ALT the question Q TAM(prosp) come Mary to the party
'Only the question whether Mary$_F$ comes to the party is important.'

Despite the restricted environments in which detecting intervention effects is possible in Samoan, the data exhibit the same pattern as Palestinian Arabic and Russian: The ~-operator gives rise to intervention effects, while the *Q*-operator does not.

2.2.4 *Turkish*

Preliminaries and structural prerequisites

In broad strokes, Turkish is a synthetic, agglutinative language with SOV as its basic word order. The language however exhibits considerable syntactic flexibility to accommodate information-structural considerations (Kural 1993; Kornfilt 1997; Kelepir 2001; İşsever 2003; Özçelik & Nagai 2011, among many others). Turkish *wh*-phrases can remain in situ, even in single *wh*-questions and within syntactic islands (e.g., Bechhofer 1985; Arslan 1999; Aygen 2007; İşsever 2009); an example is in (45).

(45) *Nilüfer kim-i gör-dü?*
Nilüfer who-ACC see-past
'Whom did Nilüfer see?'

Examples such as (45) fulfill the structural prerequisites for testing focus intervention, in that, at Logical Form, the sentence-level *Q*-operator associates with the *wh*-word at a distance. Multiple *wh*-questions, too, exhibit a preference for *wh*-in situ, but allow for word order flexibility, as shown in (46).

(46) a. *Kim kim-i kov-du?*
who who-ACC fire-past
'Who fired whom?'
b. %*Kim-i kim kov-du?*
who-ACC who fire-past
'Who fired whom?'

Besides *wh*-interrogatives, alternative questions present an additional environment for testing intervention effects in questions. Turkish, like Palestinian Arabic, employs different disjunction strategies in alternative and polar disjunctive questions, as shown in (47), where the position of the question particle *mI* determines the interpretation of the disjunctive question (see also Gračanin-Yüksek 2016).

(47) a. *Can kahve veya çay iç-ti mi?*
John coffee or tea drink-past Q
'Did John drink tea or coffee?' (Yes./No.) (# Coffee./ # Tea.)
(See also (3) in the section on Turkish in the Appendix.)

b. *Can kahve mi yoksa çay mı iç-ti?*
John coffee Q or tea Q drink-past
'Did John drink tea or coffee?' (# Yes./ # No.) (Coffee./ Tea.)
(See also (4) in the section on Turkish in the Appendix.)

New information focus in Turkish is realised syntactically and prosodically in the pre-verbal position (see Kural 1993; Özsoy & Göksel 2003; İşsever 2003, contra Göksel & Özsoy 2003). An example is in (48), from İşsever (2003: p.1034, no. (15)).

(48) a. *Fatma'yı kim arı-yor?*
Fatma-ACC who look-PROG
'Who is looking for Fatma?'
b. *Fatma'yı Ali_F arı-yor.*
Fatma-ACC Ali look-PROG
'Ali_F is looking for Fatma.'
c. *#Ali_F Fatma'yı arı-yor.*
Ali Fatma-ACC look-PROG
'Ali_F is looking for Fatma.'

Focus-sensitive particles include exclusive *sadece*, additive *-dA* and scalar *bile* and *hatta* (see also König 1991; Kelepir 2001; Göksel & Özsoy 2003; Kamali & Karvovskaya 2013). Of these, only exclusive *sadece* can associate with a focus at a distance and across an island boundary (see the section on Turkish in the Appendix), and thus allow us to create the right kind of syntactic environment for testing intervention in focus constructions.

Intervention configurations

Intervention by the ~-operator (configuration 14a) can be observed in Turkish in simple *wh*-questions, as in the examples in (49) with the exclusive particle *sadece* (see also Beck 1996; Durmaz 2016, 2017). The example additionally shows that the intervention effect can be obviated by overt movement of the *wh*-phrase (Kim 2002; Beck 1996, 2006, among others).

(49) a. Context (translated): You work as a nurse at this local clinic. Your neighbor's son, Berat, is one of the GPs there. Your neighbor is really nosy and asks you the most random things all the time. This time around, she wants to know about her son's most loyal patients, who, in the past, have insisted to be exclusively treated by her son.
b. *(*Sadece) $Berat_F$ kim-ler-i tedavi et-ti?*
EXCL Berat who-PL-ACC treatment make-past
'Who did only $Berat_F$ treat?'

c. %*Kim-ler-i sadece Berat$_F$ tedavi et-ti?*
who-PL-ACC EXCL Berat treatment make-past
'Who did only Berat$_F$ treat?'

Intervention effects by focus can also be observed in alternative questions in Turkish (see also Gračanin-Yüksek 2016). An example is in (50), from the Turkish section of the Appendix.

(50) a. *Can kahve$_F$ mi yoksa çay$_F$ mı iç-ti?*
John coffee Q or tea Q drink-past
'Did John drink coffee$_F$ or tea$_F$?'

b. **Sadece Can$_F$ kahve mi yoksa çay mı iç-ti?*
EXCL John coffee Q or tea Q drink-past
'Did only John$_F$ drink coffee$_F$ or tea$_F$?'

Regarding intervention by the *Q*-operator, focus association across an embedded question (configuration 14c) does not cause ungrammaticality, as shown in (51). The *Q*-operator does also not intervene in questions (configuration 14b), and multiple questions embedded in a question like (52) exhibit Baker ambiguities (see also Bechhofer 1985).

(51) a. Context: Şehriban and her two sisters went shopping yesterday. The next day, she visits her friend Meryem who originally had planned to join them for their shopping spree and now wants to know all about it. Curiously, she does not appear interested in what Şehriban's sisters bought:

b. *Meryem [sadece [[dün Şehriban-in$_F$ ne*
Mary EXCL yesterday Şehriban-GEN what
al-dığ-ı-nı] sor-du]].
buy-past-NOML-POSS.3SG-ACC ask-past
'Mary only asked what Şehriban$_F$ bought yesterday.'

(52) a. *Kim Tolga'nın ne-yi ner-den al-dığ-ın-ı*
who Tolga-GEN what-ACC where-ABL buy-NOML-POSS.3SG-ACC
bil-iyor?
know-PROG.3SG
'Who knows where Tolga bought what?'

b. i. Answer: Işıl.
ii. *Işıl Tolga'nın elbise-yi ner-den al-dığ-ın-ı*
Işıl Tolga-GEN dress-ACC where-ABL buy-NOML-POSS.3SG-ACC
bil-iyor, Şehriban Tolga'nın şal-ı ner-den
know-PROG.3SG Şehriban Tolga-GEN scarf-ACC where-ABL
al-dığ-ın-ı bil-iyor,…
buy-NOML-POSS.3SG-ACC know-PROG.3SG
'Işıl knows where Tolga bought the dress, Şehriban knows where Tolga bought the scarf,…'

Again, the pattern of intervention in Turkish aligns with the observations about the other languages in our sample: Intervention is caused by focus, but not by *Q*.

2.2.5 *Yoruba*

Yoruba is a language in the Niger-Congo family spoken primarily in South-Western Nigeria, with several regional dialects. It is an isolating tone language with relatively strict basic SVO word order (for grammatical overviews, see Bamgbose 2000; Awobuluyi 1978; Adesola 2005). Consultants were primarily native speakers of North-West Yoruba varieties, including the Ọyọ and Eko (Lagos) dialects, although several consultants were from other regions of Nigeria.

Preliminaries and structural prerequisites
In Yoruba, interrogatives are formed via fronting and morphological marking of the *wh*-phrase with the morpheme *ni*. If a subject is fronted, a resumptive pronoun occurs in its original position, as in Example (53b) below (see also Howell 2020).

(53) a. *Ki-ni Ade ra?*
what-FOC Ade buy
'What did Ade buy?'
b. *Ta-ni o wa si igbeyawo?*
who-FOC PRN come to wedding
'Who came to the wedding?'

Multiple *wh*-questions were rejected by native speaker consultants we worked with, as shown in (54a) and (55). Although Adesola (2006) claims that multiple questions are grammatical in Yoruba, we were unable to replicate this finding. Consultants who participated in this study consistently judged multiple questions to be unacceptable and suggested paraphrases for multiple questions such as (54b). Scope-marking questions were not tested.

(54) a. Context: Olu just returned home and has brought presents for everyone.
b. **Ki-ni Olu fun Ta-ni?*
what-FOC Olu give who-FOC
Intended: 'What did Olu give to whom?'
c. *Ki-ni Olu fun enikan-kann?*
what-FOC Olu give person-each
Consultant-suggested paraphrase for (54b):
'What did Olu give to whom? What did Olu give to each person?'

(55) a. Context: Your family has recently been on vacation. (You had to stay home and work.) They all bought different souvenirs to take home. When they get back you ask:
b. **Ta-ni o ra ki(-ni)?*
who-FOC PRN buy what(-FOC)
c. **Ta-ni ki-ni o ra?*
who-FOC what-FOC PRN buy
Intended: 'Who bought what?'

Since Yoruba does not allow in-situ *wh*-phrases, the structural prerequisites for testing intervention effects in *wh*-questions and Baker ambiguities are not met. What's more, Yoruba presents an additional complication: In Yoruba alternative questions, disjunctions must undergo fronting to a clause initial position in the same way as *wh*-phrases do, as shown in (56).

(56) *Ṣe Taiwo tabi Kehinde ni o maa lọ si Eko?*
Q Taiwo or Kehinde FOC PRN TAM go to Lagos
'Which of Taiwo or Kehinde will go to Lagos?'

As such, testing for intervention effects in alternative questions is not possible in a parallel way to the other languages of this sample. However, a somewhat different configuration provides the necessary configuration to test for intervention in alternative questions, as we will show in the paragraph on intervention configurations below.

The main focus-marking strategy in Yoruba involves fronting of a focused constituent to a clause initial focus position and marking it with the same morphological marker (= *ni)* found in *wh*-questions (see also Howell 2020). This focus-marking strategy is used both for new information focus, as shown in (57), as well as contrastive focus, as shown in (58).

(57) a. Context: There is a new book on the table when your flatmate gets home. He asks you "Who bought the book?" You answer…

b. *Emi ni mo ra iwe naa*
1SG.STR FOC 1SG.WK buy book the
'I_F bought the book.'

(58) a. Context: Is Isaac fat?
b. *Rara, o ga ni, sugbon ko sanra.*
no PRN tall FOC but NEG fat
'No, he is $tall_F$, but he is not fat.'

Focus-sensitive particles including exclusive *nikan* and the focus-sensitive negation *kọ* occur in a position adjacent to the fronted constituent, so, in most cases, the focused constituent will be adjacent to its evaluating operator.

(59) a. Context: You gave your husband Ade a list of foods to pick up on the way home, but he forgot the list. When he gets home you see:
b. *Eja nikan *(ni) Ade ra,*
fish EXCL FOC Ade buy
'Ade only bought $fish_F$.'
c. **Ade nikan ra Eja.*
Ade EXCL buy fish
Intended: 'Ade only bought $fish_F$.'
d. *#Ade ra Eja nikan.*
Ade buy fish EXCL
'Ade only bought $fish_F$.'

(60) a. Context: You find a window broken and believe it must have been done by one of the neighborhood kids. But, it can't be your neighbor's daughter Adebimpe since she was away visiting her aunt this week…
b. *Adebimpe kọ ni o fo ferese.*
Adebimpe NEG(foc.sen) FOC PRN break window
'It was not Adebimpe who broke the window.'

This creates a challenge for testing intervention, since the prerequisite for association with focus at a distance is not met in those cases. However, in some cases a larger constituent containing a narrow focus can be moved to the focus position, as in (61) below. While somewhat complex, this type of example creates an environment where a focus-evaluating ~-operator occurs at a distance from the focus it evaluates, and can therefore be used to test intervention in focus constructions.

(61) a. Context: I was talking to my friend Ade about our mutual friend Tunji who has recently made a lot of money. Ade told me that Tunji was spending money left and right, buying all kinds of expensive things. Ade said that Tunji even bought a house in Ibadan. Later I learned from another friend of mine that, not only did Tunji buy a house in Ibadan, he also bought a house in Lagos! I must have looked surprised because my friend then said: "You look surprised! I thought Tunji had already told you all about it!" I reply:

b. *[$_{CP}$ Tunji ra ile ni Ibadan$_F$] nikan ni Ade so fun mi!*
Tunji buy house in Ibadan EXCL FOC Ade tell to me
'Ade only told me that Tunji bought a house in Ibadan$_F$!'
Ko so pe Tunji ra ile ni Eko!
NEG say that Tunji buy house in Lagos
'He didn't say that Tunji bought a house in Lagos!'

Intervention configurations

As mentioned above, the fronting requirements for both *wh*-phrases and disjunctions in *wh*- and alternative questions respectively, make it impossible to test for intervention by focus in questions the same way as in other languages of the sample. However, a different configuration was used instead to look for intervention effects in disjunctive questions in Yoruba. In the LF-structure schematized in (62), a focus-sensitive particle is associated with the fronted disjunction and association of a higher *Q*-operator with the alternatives from the disjunction would need to occur across the focus-evaluating ~-operator.

(62) [Q$_i$ [… [only [~ [[$_{DisjP}$ A or $_F$ B]$_i$ [1 [$_{TP}$ …]]]]] …]]

Structures like (62) are predicted to be ungrammatical if the focus-evaluating ~ blocks association with alternatives in its scope and, thus, can be used as a test for intervention (configuration 14a).

Let us first look at the exclusive particle *nikan* in alternative questions like (63).

(63) a. Context: You know that only one of your two sisters Taiwo or Kehinde will go to Lagos, but you're not sure which of the two will go. You ask your mother:

b. #*Ṣe Taiwo tabi Kehinde nikan ni o maa lọ si Eko?*
Q Taiwo or Kehinde EXCL FOC PRN TAM go to Lagos

c. Intended: 'For which of Taiwo or Kehinde is it true that only they will go to Lagos?'
(Consultant comment: "You want to confirm if only one of them will go.")

d. *[Q$_i$ [[[Taiwo or Kehinde]$_i$ EXCL FOC] PRN TAM go to Lagos]]

In (63), the alternative question reading is unavailable, however the sentence has a grammatical polar question interpretation that can be paraphrased as "Is it true that only (one of) Taiwo or Kehinde will go to Lagos?" To derive the polar question interpretation, the exclusive particle *nikan* associates with the focused disjunction to rule out the stronger alternative 'Taiwo and$_F$ Kehinde'. For the alternative question interpretation, however, the *Q*-operator cannot associate with the alternatives introduced by the disjuncts, suggesting that focus-sensitive particle *nikan* causes intervention effects in questions in Yoruba.

In (64), adding the focus-sensitive negation particle (*kọ*) causes ungrammaticality in the otherwise grammatical alternative question (65), whereas the association of *kọ* with a disjunction in a declarative minimal pair is grammatical, as shown in (66) where the focus-sensitive ko associates with the disjunction 'Taiwo or Kehinde'.

(64) **Ṣe Taiwo tabi Kehinde kọ ni o fọ ferese?*
Q Taiwo or Kehinde NEG FOC PRN break window
Intended: 'Which of Taiwo or Kehinde didn't break the window?'

(65) *Ṣe Taiwo tabi Kehinde ni o fọ ferese?*
Q Taiwo or Kehinde FOC PRN break window
'Which of Taiwo or Kehinde broke the window?'

(66) *Taiwo tabi Kehinde kọ ni o fọ ferese.*
Taiwo or Kehinde NEG FOC PRN break window
'It wasn't Taiwo or Kehinde who broke the window.'

The unacceptability of (64) and (66) as alternative questions suggests that intervening focus-sensitive operators cause intervention effects in Yoruba.

Intervention effects by *Q* cannot be tested in Baker sentences (configuration (14b)), due to the lack of grammatical multiple questions. However, the results from association with focus across questions (configuration 14c), as in (67) below, show that the presence of an intervening *Q*-operator does not cause ungrammaticality. In (67), the focus associated with the exclusive particle in the matrix clause occurs within an embedded question in a fronted CP. The context and follow-up sentence in (67) were used to verify that the exclusive particle was indeed associated with narrow focus on *Tunji* in the fronted clause.

(67) a. Context: Kemi is the younger sister of Tunji and Olu. She thinks her brother Olu is the coolest and wants to do everything just like him: read all the same books he reads, play all the same sports he plays, etc. She thinks Tunji is cool too, but not quite as cool as Olu. Today I was out shopping with Kemi to get her a new book to read. When she was thinking about which book to buy, she asked me which book Olu was reading and which book Tunji was reading. I was only surprised that she asked which book Tunji was reading, but not surprised that she asked which book Olu was reading.

b. *Pe Kemi beere iwe wo ni Tunji n ka nikan l' o ya mi lenu.*
that Kemi ask book which FOC Tunji PROG read EXCL FOC PRN open my mouth
'It only surprized me that Kemi asked which book Tunji_F is reading.'
Ko ya mi lenu pe o beere iwe wo ni Olu n ka.
NEG open my mouth that she ask book which FOC Olu PROG read
'It didn't surprize me that she asked which book Olu is reading.'

In Yoruba, the data from intervention in alternative questions suggest that ~ causes intervention effects while association of a focus-sensitive particle with narrow focus across an embedded question suggests that *Q* does not cause intervention.

2.3 Summary of results

As the discussion of the individual languages above illustrates, the constructions used to test for intervention effects varied considerably across the languages of the sample, while the ultimate conclusion remains the same: While the ~-operator consistently causes intervention effects, the *Q*-operator seems to never cause intervention effects.

Let us first consider question formation: Across the languages of the sample, the availability of question formation strategies varies considerably from language to language. Although the particular environments for testing intervention in questions therefore differ across languages, each of the languages in the sample provides at least one construction in which it is possible to test for intervention effects in questions (configuration 14a). Table 3 summarizes the question types that allow for distance association of a *Q*-operator with an alternative-evaluating *wh*-item or disjunction. In some of the languages, including Palestinian Arabic, Samoan and Yoruba, the lack of grammatical multiple *wh*-questions prevents testing for Baker ambiguities (configuration 14b).

Table 3. Prerequisite: Distance association with *Q*

Intervention testable in…	Simple *wh*-	Multiple *wh*-	Scope marking	Alternative
English	NO	YES*	NO	YES
German	NO	YES	YES	YES
Palestinian Arabic	NO	NO	YES	YES
Russian	NO	YES**	NO	YES
Samoan	NO	NO	NO	YES
Turkish	YES	YES	NO	YES
Yoruba	NO	NO	NO	YES

* English *wh*-in-situ has been argued by some (Pesetsky 2000; Kotek & Erlewine 2016) to involve covert movement of *wh*-phrases in superiority-obeying questions. Thus intervention is testable only in superiority violating questions with which (which is not subject to superiority).
** Russian is a multiple *wh*-fronting language. Non-fronted *wh*-phrases in embedded multiple questions were accepted by some native speakers and observed in corpus data reported by Berezovskaya & Howell (2020).

Similarly, for focus, different focus-sensitive particles across the languages of the sample and their differing syntactic restrictions lead to a variety of focus-sensitive particles and syntactic structures being used to test for intervention in focus constructions. However, in each language, we were able to find at least one focus-sensitive particle that could occur grammatically at a distance from the focus it associated with, allowing us to test for association with focus across an embedded question.

Despite the variation when it comes to *where* we can test for intervention effects, the overall results, summarized below in Table 5, are uniform: Intervention by focus in questions (configuration 14a) is robustly judged to cause degraded acceptability, whereas intervention by a *Q*-operator, both in focus constructions and in questions (configurations 14b,c) is not. These results align with the conclusions that are reported in the literature for English and German.

What do these results mean for understanding the semantic properties of alternative-evaluating operators across languages? Recall from Section 1 that intervention effects can be analyzed as the result of an alternative-evaluating operator associating unselectively with alternatives in its scope and thus blocking any other operator from accessing alternatives introduced its scope. Conversely, we suggested that the absence of intervention effects in a relevant intervention configuration is evidence for a selective mechanism of alternative evaluation. In the next section, we will spell out a semantic analysis of the crosslinguistic data along these lines. This analysis will model ~ as uniformly unselective and *Q* as uniformly selective.

Table 4. Prerequisite: Distance association with focus

	Focus-sensitive particle	**Distance association at LF?**
English	*only* (exclusive)	YES
	even (scalar)	YES
German	*nur* (exclusive)	YES
	sogar (scalar)	YES
Palestinian Arabic	*bas* (exclusive)	YES
Russian	*tol'ko* (exclusive)	YES
Samoan	*naʻo* (exclusive)	YES*
Turkish	*sadece* (exclusive)	YES
	bile (scalar)	NO
	-dA (additive)	NO
Yoruba	*nikan* (exclusive)	YES**
	kọ (negation)	YES**

* Adjoins only to nominal constituents.
** Adjoins only to constituents that can undergo focus fronting (NP or CP).

Table 5. Intervention effects by language and configuration

	Intervention by ~	**Intervention by *Q***	
	Focus Intervention (14a) [Q_i [… [~ [… wh_i …]] …]]	**Focus across *Q* (14c)** [$\sim_i$ [… [Q [… F_i …]] …]]	**Baker ambiguity (14b)** [Q_i [… [Q_{ii} [… wh_i …]] …]]
English	*	✓	✓
German	*	✓	✓
Palestinian Arabic	*	✓	(Not testable.)
Russian	*	✓	✓
Samoan	*	✓	(Not testable.)
Turkish	*	✓	✓
Yoruba	*	✓	(Not testable.)

3. Analysis

The empirical results from the previous section have consequences for how the grammar of alternatives is implemented within a formal semantic system. Section 1 outlined how alternatives and the operators that evaluate them work in the interpretation of questions and focus. This section spells out a compositional semantic implementation for alternatives that is consistent with the empirical results of our crosslinguistic study. Following Kratzer (1991), Wold (1996), and Beck (2006, 2016), we use here a framework that employs distinguished variables introduced by a focused constituent or a *wh*-phrase as a means of creating alternative sets. The main reason for choosing this implementation over a more familiar Roothian one is that it allows for more flexibility in the semantics of alternative-evaluating operators: Specifically, it can model both selective and unselective operators, whereas Roothian alternative-evaluating operators are necessarily unselective (Rooth 1985, 1992). We argue, based on the crosslinguistic data, that across languages the ~-operator evaluates alternatives unselectively, while the *Q*-operator does so selectively (for an in-depth discussion of the applicability of this framework to data of this kind, see also Howell (2020)). The goal of this section is to spell out our semantic analysis and illustrate how it captures the crosslinguistic data.

3.1 Technical implementation using distinguished variables

In a framework that uses distinguished variables, expressions are associated with two semantic representations: First, they have a semantic value relative to the ordinary assignment function *g*; this corresponds to Rooth's ordinary semantic value – and second, they have a semantic value relative to *g* and an additional *distinguished* assignment function *h*. This second level of representation is the counterpart to Rooth's alternative semantic tier. However, it differs from a Roothian alternative semantic value in that it is not itself a set of alternatives. Rather, alternative sets are formed by abstracting over distinguished variables contained within these expressions. Consider the example sentences in (68), which will be used to illustrate how this system derives the interpretation of *wh*-questions, alternative questions and focus respectively.

(68) a. *Who left?*
[Q_i [λw [who_i $left_w$]]]
b. *Did Alex or Beate leave?*
[Q_i [λw [[Alex or Beate]$_i$ $left_w$]]]

c. *Only Alex$_F$ left.*
[only C [~$_C$ [Alex$_{Fi}$ left$_w$]]]

The semantic value of constituents that do not contain a distinguished variable relative to the ordinary assignment function *g* is identical to their value relative to *g* and the distinguished assignment *h*. So, for example, the value of the VP *left* relative to *g* and relative to *g* and *h* in the examples above is the function in (69) for both.

(69) [[left]]^g = λw. λx. x left in w
[[left]]^{g,h} = λw. λx. x left in w

Some terminal nodes including F-features, *wh*-items and disjunctions introduce a distinguished variable that is assigned a value by *h*. The focused NP *Alex*, the *wh*-phrase *who* and the disjunction *Alex or Beate* each introduce a variable that is evaluated by the distinguished assignment function *h*. Note that, following Beck (2006, 2016), the value of *wh*-items relative to only *g* (i.e., their 'ordinary value') is not defined.

(70) a. [[Alex$_{Fi}$]]^g = Alex
[[Alex$_{Fi}$]]^{g,h} = h(i)
b. [[who$_i$]]^g is undefined
[[who$_i$]]^{g,h} = h(i)
c. [[Alex or Beate]]^g = λP. P(Alex) or P(Beate)
[[Alex or Beate]]^{g,h} is defined iff h(i) = Alex or h(i) = Beate. If so,
[[Alex or Beate]]^{g,h} = h(i)

Semantic composition proceeds via standard compositional rules including function application, predicate modification, predicate abstraction (see Heim & Kratzer 1998, p. 129 for the appropriate ('pedantic') versions). Alternative-evaluating operators are responsible for creating sets of alternatives using the distinguished variables introduced by focus, *wh*-items and disjunctions. They bind distinguished variables in their scope and abstract over them to create a set of alternatives. These alternatives then get used in a familiar way: In questions, the alternatives evaluated by *Q* become the question meaning, and in focus constructions, the alternatives evaluated by ~ restrict the value of a free variable C, just as in Rooth's (1992) proposal. The empirical results from Section 2 influence the specifics of our proposal about how ~ and *Q* bind distinguished variables. The intervention effects observed with focus-evaluating operators suggest that ~ binds distinguished variables in its scope unselectively, whereas the lack of intervention effects from *Q* suggest that it is a selective binder of distinguished variables. The proposed meaning rules for *Q* and ~ below reflect this choice. First, let us

look at the meaning rule for the selective *Q*-operator, in (71), adapted from Beck (2016).[7] It binds only those distinguished variables in its scope that it is co-indexed with, yielding a question set made up of alternatives to the co-indexed alternative-introducing item(s) only.

(71) Meaning rule for a selective *Q*:
If $\alpha = [\ Q_i\ \beta\ ]$, then for any g,h and the semantic type τ determined by i:
$[[\ \alpha\ ]]^{g} = \{\ [[\ \beta\ ]]^{g,\varnothing[x/i]} \mid x \in D_\tau\ \}$
$[[\ \alpha\ ]]^{g,h} = \{\ [[\ \beta\ ]]^{g,h[x/i]} \mid x \in D_\tau\ \}$

The derivation sketched in (72) illustrates how this *Q*-operator works using the example from (68a). We assume that (68b) is basically analogous with the disjunctive phrase taking the part of the *wh*-phrase, but we do not want to go into too much detail regarding disjunctions here.

(72) $[[\ [\ Q_i\ [\ who_i\ left\ ]\ ]\ ]]^{g}$
$= \{\ [[\ who_i\ left\ ]]^{g,\varnothing[x/i]} \mid x \in D_e\ \}$
$= \{\ \lambda w.\ \varnothing[x/i]\ (i)\ left\ in\ w \mid x \in D_e\ \}$
$= \{\ \lambda w.\ x\ left\ in\ w \mid x \in D_e\ \}$
$= \{\ \lambda w.\ Alex\ left\ in\ w, \lambda w.\ Beate\ left\ in\ w, \ldots\ \}$

For focus constructions, the results of our crosslinguistic study indicate that the alternative-evaluating ~ causes intervention effects and we therefore propose to model it as an unselective binder of distinguished variables. A rule for the unselective ~-operator (Beck 2016: p. 251) is spelled out in (73).

(73) Meaning rule for unselective ~:
If $\alpha = [\ \sim_C\ \beta\ ]$, then for any g,h:
$[[\ \alpha\ ]]^{g}$ is only defined if $g(C) \subseteq \{\ [[\ \beta\ ]]^{g,h} \mid$ h is a total distinguished variable (d.v.) assignment function$\}$.
Then, $[[\ \alpha\ ]]^{g} = [[\ \beta\ ]]^{g}$ and $[[\ \alpha\ ]]^{g,h} = [[\ \beta\ ]]^{g,\varnothing}$.

This amounts to Rooth's original ~-operator spelled out in a framework that uses distinguished variables. The meaning rule for ~ unselectively binds all distinguished variables in its scope, creating a set of alternatives by replacing each vari-

7. Following Heim & Kratzer (1998), the notation h[x/i] denotes the assignment function h, to which the index-value pair <i,x> has been added. An empty distinguished assignment function is used in the meaning rule for *Q* to ensure that other distinguished variables within the scope of, but not bound by, *Q* are 'ignored' during question formation. (Note that $[[\alpha]]^{g,\varnothing}$ is equivalent to $[[\alpha]]^{g}$ and, similarly, for all variables except those bearing the i-index, its value relative to the distinguished $\varnothing^{[x/i]}$ is also equivalent to its value relative to only ø.) The reader is referred to Beck (2016) for further technical discussion.

able with all of its possible values. Like Rooth's original proposal, it restricts the value of a free variable C to a subset of this set of alternatives and results in an expression where all distinguished variables occurring in its scope are unavailable for binding by higher operators. The free variable C, restricted by ~, is employed in a variety of ways in different types of focus constructions. For example, the set denoted by C can serve as the restrictor of focus-sensitive particles such as the exclusive *only*, with the lexical entry in (74).[8] The calculation of the definedness conditions and semantics for (68c) is sketched in (75). The definedness condition triggered by the meaning rule for ~ is calculated in (76c) using the set of alternatives derived via binding of the focus. Focus sensitive particles like *only* are always accompanied by a ~.

(74) $[\![\text{only}]\!] = \lambda w.\, \lambda C.\, \lambda p\text{: } p(w).\ \forall q\, [q \in C \,\&\, q(w) \rightarrow p \subseteq q]$

(75) a. $[\![[\text{only } C\, [\sim_C [\text{Alex}_{Fi} \text{ left}]]]]\!]^g$

b. $[\![(76a)]\!]^g = [\![\text{only}]\!] (C) ([\![[\sim_C [\text{Alex}_{Fi} \text{ left}]]]\!]^g)$
$= \lambda w\text{: Alex left in } w.\ \forall q\, [\, q \in g(C) \,\&\, q(w)$
$\rightarrow [\![[\sim_C [\text{Alex}_{Fi} \text{ left}]]]\!]^g \subseteq q\,]$

c. $[\![(76a)]\!]^g$ is defined only if $g(C) \subseteq \{ [\![\text{Alex}_{Fi} \text{ left}]\!]^{g,h} \mid h$ a total d.v. assignment $\}$
$\Leftrightarrow [\![(76a)]\!]^g$ is defined only if
$g(C) \subseteq \{ \lambda w'.\, h(i) \text{ left in } w' \mid h$ a total d.v. assignment $\}$
$\Leftrightarrow [\![(76a)]\!]^g$ is defined only if $g(C) \subseteq \{ \lambda w'.\, x \text{ left in } w' \mid x \in D_e \}$

d. If defined,
$[\![(76a)]\!]^g = \lambda w\text{: Alex left in } w.\ \forall q\, [\, q \in \{ \lambda w'.\, x \text{ left in } w' \mid x \in D_e \} \,\&\, q(w)$
$\rightarrow [\![\text{Alex}_{Fi} \text{ left}]\!]^{g, \overset{x}{\varnothing}} \subseteq q\,]$
$= \lambda w\text{: Alex left in } w.\ \forall q\, [\, q \in \{ \lambda w'.\, x \text{ left in } w' \mid x \in D_e \} \,\&\, q(w)$
$\rightarrow [\![\text{Alex}_{Fi} \text{ left}]\!]^g \subseteq q\,]$
$= \lambda w\text{: Alex left in } w.\ \forall q\, [\, q \in \{ \lambda w'.\, x \text{ left in } w' \mid x \in D_e \} \,\&\, q(w)$
$\rightarrow [\lambda w'.\, \text{Alex left in } w'] \subseteq q\,]$

e. Presupposition: The proposition 'that Alex left' is true in the evaluation world.
Assertion: All alternatives to 'that Alex left' that are true in the evaluation world are entailed by 'that Alex left'.

Now that we have introduced the basic components of this framework for doing alternative semantics, the next section will illustrate how it can adequately capture the intervention pattern observed across the different languages in our study.

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8. We ignore here the extensive debate surrounding how exactly to formulate the semantic contribution of *only* (e.g. Horn 1972; Jacobs 1983). What is relevant here is how *only* makes use of alternatives rather than what exactly it asserts about them.

3.2 Applying the framework to the crosslinguistic data

The primary advantage of this framework for alternatives is that it is able to model selective alternative-evaluating operators. It can therefore model grammatical examples with an intervening *Q*-operator, such as focus association across an embedded question and Baker ambiguities (alternative analyses will be addressed in the next section). At the same time, the semantics proposed above for the (unselective) ~-operator rightly predicts that focus-sensitive operators should cause intervention when they occur in the relevant position at LF. To illustrate this, there are two examples below. The first one is an example of intervention of a focus in a question in Turkish and the second is an example of association with focus across an embedded question in Russian.

Example 1. *Intervention effect in a wh-in-situ question in Turkish*

The Turkish example in (76) repeated from Section 2.2.4 is an example of an intervention effect caused by the presence of a focus-sensitive particle in a *wh*-in-situ question. We analyze the exclusive particle *sadece* in Turkish as a propositional operator that occurs at LF adjoined to a clausal category, as in (76b). A derivation for this example is sketched in (77). Note that the resulting composition is not semantically well formed: The value of the expression generated by applying the unselective meaning rule for ~ to [$\text{Berat}_{\text{Fii}}$ who_{i} treat] is the value of [[[$\text{Berat}_{\text{Fii}}$ who_{i} treat]]]^{g} which is undefined due to the undefinedness of [[who_{i}]]^{g}. Following Beck (2006), we take the degraded acceptability of examples like (54) to be a reflection of their semantic undefinedness.

(76) a. **Sadece Berat kim-ler-i tedavi et-ti?*
EXCL Berat who-PL-ACC treatment make-PAST
'Who did only Berat treat?'
b. LF: [Q_{i} [only C [$\sim_{\text{C}}$ [$\text{Berat}_{\text{Fii}}$ who_{i} treat]]]]

(77) a. Unselective ~:
[[$\sim_{\text{C}}$ $\text{Berat}_{\text{Fii}}$ who_{i} treat]]^{g,h}
= [[$\sim_{\text{C}}$ $\text{Berat}_{\text{Fii}}$ who_{i} treat]]$^{g,\emptyset}$
= [[$\text{Berat}_{\text{Fii}}$ who_{i} treat]]^{g}
b. [[who_{i}]]^{g} is undefined, hence [[$\text{Berat}_{\text{Fii}}$ who_{i} treat]]^{g} is undefined (by FA).
[[$\sim_{\text{C}}$ $\text{Berat}_{\text{Fii}}$ who_{i} treat]]$^{g,\emptyset}$ is undefined (by definition of ~)
and so is the sister of the *Q*-operator:
[[only C $\sim_{\text{C}}$ $\text{Berat}_{\text{Fii}}$ who_{i} treat]]$^{g,\emptyset}$ (by FA)
Hence, [[(77b)]]^{g} is undefined (by definition of *Q*).

The effect illustrated in (76), (77) arises whenever the ~ is the first alternative evaluating operator to c-command a *wh*-expression.

Example 2. *Absence of intervention in focus association across a question in Russian*

The Russian example in (78) repeated from Section 2.2.2 is an example of association with focus across a *Q*-operator that was judged to be grammatical by our native speaker consultants. The LF structure we attribute to this example is in (78b). Unlike in the Turkish example above, here the use of the selective *Q*-operator leads to a well-defined expression with the attested interpretation.

(78) a. *Masha tol'ko sprosila, za kogo progolosoval Petja*$_F$.
Masha EXCL asked for who(ACC) voted Petja
'Masha only asked who Petja$_F$ voted for.'

b. LF: [only C [$\sim_C$ [Masha ask [Q_i who$_i$ 1 Petja$_{Fii}$ voted for t_1]]]]

(79) a. Selective *Q*:
[[Q_i who$_i$ 1 Petja$_{Fii}$ voted t_1]]^g
= { λw. vote(y)(Petja)(w) | y ∈ D_e }
[[Q_i who$_i$ 1 Petja$_{Fii}$ voted t_1]]^{g,h}
= { λw. vote(y)(h(ii))(w) | y ∈ D_e }

b. Unselective ~:
[[$\sim_C$ Masha ask Q_i who$_i$ 1 Petja$_{Fii}$ voted t_1]]^g
= λw′. ask(Masha)({ λw. vote(y)(Petja)(w) | y ∈ D_e })(w′)
if g(C)⊆{ λw′. ask(Masha)({ λw. vote(y)(z)(w) | y ∈ D_e })(w′) | z∈ D_e }

c. Result, if defined:
[[only C $\sim_C$ Maria ask Q_i who$_i$ 1 Petja$_{Fii}$ voted t_1]]^g
= λw″. ∀q [q∈{λw′. ask(Masha)({ λw. vote(y)(z)(w) | y∈D_e })(w′)
| z∈D_e } & q(w″)
→ λw‴. ask(Masha)({ λw. vote(y)(Petja)(w) | y ∈ D_e })(w‴) ⊆ q]
'The only z such that Mary asked who z voted for is Petja.'

A *Q*-operator can c-command a focus or a *wh*-expression and that element still be evaluated by a higher alternative-evaluating operator.

Both examples stand prototypically for the crosslinguistic data from Section 2. The crosslinguistically stable pattern of intervention effects caused by the ~-operator and the lack of intervention by *Q* can be analyzed in terms of differing binding properties of these two alternative-evaluating operators, leading to the following conclusion: across the languages in our sample, the focus-evaluating ~-operator unselectively targets all alternatives introduced in its scope, whereas the *Q*-operator has the ability to selectively target individual alternative-

introducing items. These results are highlighted in Table 6 and derived by the analysis presented in this section.

Table 6. Selectivity of ~ and *Q* across the languages of our sample

Language	~-operator	*Q*-operator
Palestinian Arabic	unselective	selective
English	unselective	selective
German	unselective	selective
Russian	unselective	selective
Samoan	unselective	selective
Turkish	unselective	selective
Yoruba	unselective	selective

This approach to alternatives is successful in deriving the empirically observed pattern of intervention, but other approaches to the data are also imaginable. The next section will explore this question and, in particular, consider an alternative explanation of the data under which the lack of intervention effects from *Q* is the result of covert focus and *wh*-movement, rather than the selectivity properties of alternative-evaluating operators.

4. Connecting the analysis to literature on the grammar of alternatives

In the recent literature on focus association and intervention effects, one important point of discussion is covert focus movement and covert *wh*-movement and their influence on intervention effects and focus association (see e.g. Karttunen 1977; Huang 1982; Kotek & Erlewine 2016 for covert *wh*-movement, Drubig 1994; Rooth 1996; Krifka 2006; Wagner 2006; Erlewine & Kotek 2018 on covert focus movement, and Pesetsky 2000; Erlewine & Kotek 2014; Kotek & Erlewine 2016; Erlewine & Kotek 2017 for how these movements can explain a lack of intervention effects). Assuming such movements calls into question one part of the universals we propose here: If elements can move across *Q*, any non-intervention by *Q* could be a result of movement instead of *Q* being a selective binder. Essentially, covert movement would create a false positive when testing for selectivity using intervention effects. Since the only operator for which we claim selectivity is *Q*, this is the only part of our analysis that would be affected by this kind of movement.

If our findings were to be explained by way of movement **instead** of selectivity, the following generalization would have to be derived:

(80) In all environments in which an intervention effect (by ~) is found, the alternative trigger c-commanded by ~ cannot move covertly.
In all environments in which no intervention effect (by *Q*) is found, the alternative trigger c-commanded by *Q* moves covertly.

Concretely:

(81) No movement: *Wh*-in-situ and disjunctions under ~
Movement: Focus and *wh*-in-situ under *Q*

This immediately raises the question why *wh*-in-situ can move out from under *Q* but not from under ~. It also raises the general question of what motivates these assumptions about covert movement, and what independent justification might be found for (80). It is not obvious that there is such justification. To give just one example of a possible line to explore: Does movement of *wh*-in-situ from under *Q* (i.e., in Baker ambiguities) exhibit superiority effects (an indicator of movement, Pesetsky 2000)? If yes, what prevents the same movement when a ~ occurs? We leave it to future research to spell out such an alternative account of our findings and to look for empirical support for it.

5. Discussion and conclusion

Sections 3 and 4 argued that the crosslinguistic data from this study point towards an analysis of the grammar of alternatives with the flexibility of variable binding, rather than the less flexible Roothian alternative semantic system. However, the formal system outlined in Section 3 allows for more possible variation than we actually observed in the data. In particular, it is possible to model any alternative-evaluating operator either selectively or unselectively within this framework. Therefore, in principle, when considering the (un)selectivity of the ~-operator and the *Q*-operator, we might expect to find four different types of languages.

Table 7. A possible crosslinguistic typology of alternative-evaluating operators

Type 1 languages	**Type 2 languages**	**Type 3 languages**	**Type 4 languages**
Selective ~	Unselective ~	Unselective ~	Selective ~
Selective *Q*	Selective *Q*	Unselective *Q*	Unselective *Q*

As we saw in Section 2, all of the languages in our crosslinguistic sample fall into the second of these four categories. In other words, there is considerably less crosslinguistic variation than we would expect given the logical option space in this formal system.

The lack of observed variation with respect to intervention effects extends across the different focus-sensitive particles considered in the study. In English, for example, intervention effects are observed with the exclusive particle *only* as well as the scalar particle *even*, and in German, intervention effects occur with the exclusive *nur* and the scalar particle *sogar*. Similarly, in Turkish we found evidence of intervention with the exclusive *sadece* and the scalar particle *bile*, and Yoruba intervention effects were found with both the exclusive particle *nikan* and the focus-sensitive negation particle *kọ*. This result is relevant for the debate about whether alternative-sensitive particles associate directly or indirectly with alternatives (Rooth 1992; Beaver & Clark 2003, 2008). A direct theory of focus association, where focus particles are themselves alternative-evaluating operators, provides even more room for crosslinguistic variation, since each focus-sensitive particle could either associate selectively or unselectively with foci in its scope. Instead, we observe a stable pattern of intervention effects across all focus-sensitive particles we considered in the study.[9]

Given the observed lack of variation, both across languages and across the different focus-sensitive operators tested, we propose the following crosslinguistic semantic universals as testable research hypotheses.

(82) **Universal 1: Unselective Squiggle**
Universal 1a: **Association via Squiggle**
Focus evaluation is always mediated by (the same) focus-evaluating operator.
Universal 1b: **Unselective Association**
In all languages ~ is an unselective binder of distinguished variables.

(83) **Universal 2: Selective *Q***
In all languages, the *Q*-operator binds distinguished variables introduced by *wh*-items or disjunctions in its scope selectively.

While our focus has been on the two best researched alternative-evaluating operators, the squiggle and the question operator, further research could also address the properties of other alternative-evaluating operators such as the exhaustivity

9. Conversely, non-intervention for us would indicate absence of a ~-operator. See Haida (2007) and Haida and Repp (2013) for interesting data on additives, and Krifka (1999) for an independently motivated analysis compatible with our position.

operator (Fox 2007; Fox & Spector 2018; Bade & Sachs 2019) as well as their crosslinguistic availability.

Taking a step back, our study provides further support for the observation from the semantic literature that intervention effects (independent of the theory used to explain them) are ubiquitous. We provide a new perspective on the observations that intervention effects are crosslinguistically widespread or even, potentially, universal (Beck 2006; Pesetsky 2000, and references therein) by linking the phenomenon to underlying uniformity in the semantic properties of the alternative-evaluating operators ~ and *Q*.

We argue that the basic mechanisms of alternative evaluation via an unselective ~ and of question formation via a selective *Q* are employed across languages. And as these two pieces of machinery interact in the same way across languages, we argue that this is where the explanation for intervention effects can be found. Intervention is not about the lexical content of an intervening operator, it is about the grammar.

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Abbreviations

ABL	ablative case
ACC	accusative case
ADD	additive
ALT	morphological marker of focus alternatives
DAT	dative case
DIR	directional particle
d.v.	distinguished variables

ERG	ergative case
EXCL	exclusive particle
FEM	feminine
FOC	focus
foc.sen	focus-sensitive
FUT	future
GEN	genitive case
NEG	negation
NOML	nominalizer
PART	particle
PFV	perfective
PL	plural
POSS	possessive
PREP	preposition
PRN	pronoun
prosp	prospective
PROG	progressive
Q	question marker in alternative questions
REL	relative pronoun
SCL	scalar
SG	singular
STR	strong pronoun
TAM	tense-aspect marker
WK	weak pronoun

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Appendix. Data on intervention and prerequisites

This appendix provides data from each language in our sample on the structural prerequisites for testing intervention effects (focus association, question formation and islands for movement) as well as the core data on intervention by ~ and *Q*. Data points are given along with the contexts used in elicitation. The appendix entry for each language contains the data listed below. It does not represent an exhaustive list of the data collected in connection with this study, but is meant to give a representative overview for each language. The appendix entry for each language contains the following data:

1. Language name, family, basic word order and reference grammar
2. Prerequisites
    I. Questions
        i. Simple (matrix) *wh*-question formation
        ii. Multiple question formation
        iii. Scope-marking questions (if available)
        iv. Disjunctive questions
        v. Association with Q from within an island

II. Focus
  i. Primary focus-marking strategy(-ies) of the language
  ii. Focus-sensitive particles with examples
  iii. Distance association with focus
  iv. Association with focus across an island
  v. Islands (data illustrating exemplary islands for movement in the language)

3. Intervention
  I. Intervention by ~
  II. Intervention by Q

A. *German (Indo-European, West Germanic)*

Basic word order: SOV

Reference grammars: Eisenberg (2013); Zifonun et al. (1997)

Prerequisites

I. German – Questions

Basic *Wh*-Object Questions

(1) *Was hat der Hund gefressen?*
what has the dog eaten
'What did the dog eat?'

Comment: *Wh*-movement is obligatory in single matrix and embedded *wh*-questions (excluding echo questions).

Multiple *Wh*-Questions

(2) *Wen hat der Polizist was gefragt?*
who(ACC.) has the policeman what asked?
'Whom did the policeman ask what?'

Comment: Additional *wh*-phrases in multiple questions remain in situ.

Scope Marking

(3) *Was meint Andreas, wo sie ihr Handgepäck vergessen haben?*
what thinks Andreas where they their hand.luggage forgotten have
'Where does Andreas think they have forgotten their hand baggage?'

(See also Lutz, Müller & von Stechow 2000 (eds.), among many others.)

Comment: In long distance questions, scope marking with partial movement of the *wh*-phrase is possible.

Disjunctive Questions

A. Polar Question

Context (translated from German): Caroline has two sons, Paul and Chris. Both her sons have been assigned some chores around the house. For example, each boy has to feed either the cat or the dog. Caroline knows that Paul often forgets to do his tasks and asks Chris:

(4) *Hat Paul den Hund oder die Katze gefüttert?*
has Paul the dog or the cat fed
'Has Paul fed the dog or the cat?'

B. Alternative Question

Context (translated from German): Caroline is the mother of Paul and Chris. Both children have to do some tasks in the housekeeping. For example, each boy has to feed either the cat or the dog. Thereby, Caroline wants the boys to communicate to each other in order to not feed one animal twice. Chris is only two years old and does not understand which animal he has to feed. In order to help, Caroline asks him:

(5) *Hat Paul den Hund oder die Katze gefüttert?*
has Paul the dog or the cat fed
'Has Paul fed the dog or the cat?'

Wh-Question in situ within Island

(6) **Wer hat den Jungen, [der wen kennt] eingeladen?*
who has the boy which whom knows invited
Literally: 'Who did invite the boy who knows whom?'

II. German – Focus

Constituent New Information Focus

Context: Wen hat Sabine angerufen? ('Whom did Sabine call?')

(7) *Sabine hat Andreas$_F$ angerufen.*
Sabine has Andreas called
'Sabine called Andreas$_F$.'

Comment: Focus is realized phonologically, by pitch accent.

Focus-Sensitive Particles

(See also Jacobs 1983; König 1991; Büring & Hartmann 2001; Sudhoff 2010; Haida & Repp 2013.)

A. Exclusive Particle (*nur*)

Context: Frank, Alexandra and Max go to an all-you-can-eat burger restaurant.
The next day Alexandra tells her best friend:

(8) *Max hat nur Salat$_F$ gegessen.*
Max has EXCL salad eaten
'Max had only a salad$_F$.'

B. Scalar Particle (*sogar*)

Context: Konstantin is always on a diet. But when Sabine brings her infamous chocolate cookies, then…

(9) *Sogar Konstantin$_F$ hat einen Keks gegessen.*
SCL Konstantin has a cookie eaten
'Even Konstantin tried a cookie.'

C. Additive Particle (*auch*)

Context: Nadine submitted an abstract to a competitive conference.

(10) *Auch Saskia$_F$ reichte einen Abstract ein.*
ADD Saskia handed a abstract in
Saskia, too, submitted an abstract.

Distance Association

Context (translated from German): Andreas tells his friends that his car broke down and that he needs to buy a new one. He does not have a desire to drive an expensive new car, but only needs a second-hand car to drive to work. His one friend Paul misunderstands and thinks that he does not want to buy any car. Another friend, Chris, explains once more:

(11) *Andreas hat nur gesagt, dass er keinen Neuwagen$_F$ kauft.*
Andreas has EXCL said that he no new.car buys
'Andreas only said that he does not buy a [new car]$_F$.'

Association across an Island

Context (translated from German): It is the last lesson before the exam and every pupil is allowed to ask questions with regard to the upcoming exam. The teacher is able to answer every question besides the one that Bill has asked.

(12) *Nur die Frage, die Bill$_F$ gestellt hat, kann der Lehrer nicht beantworten.*
EXCL the question that Bill asked has can the teacher not answer
'Only the question that Bill$_F$ asked, the teacher cannot answer.'

German – Relative clause islands

(13) a. *Jan kennt den Witz, den Johanna erzählt hat.*
Jan knows the joke that Johanna told has
'Jan knows the joke that Johanna has told.'

b. **Wer kennt Jan den Witz, den __ erzählt hat?*
who knows Jan the joke that told has
Literally: 'Who does Jan know the joke that told?'

Summary prerequisites:

Prerequisites for testing intervention are met in German as distance association with both *Q* and ~ is possible.

Intervention effects in German

I. German – Intervention by the ~-Operator

A. Intervention by the ~-Operator with *wh*-in situ

Context (translated from German): Alexander's friends David and Christine had a date. Afterwards, Alexander asks both separately how it went. He finds out that they kissed in the end, and only asks David briefly before they meet Christine again whether he enjoyed the kiss.

(14) **Was hat Alexander nur David$_F$ wann gefragt?*
what has Alexander EXCL David when asked
Literally: 'What did Alexander ask only David$_F$ when?'

B. Intervention by the ~-Operator in Alternative Questions

Context: Caroline is the mother of Paul and Chris. Both children have to do some tasks in the housekeeping. For example each boy has to feed either the cat or the dog. Caroline knows that Chris did not feed one of the two animals yet and wants to find out which animal was not fed. She asks Chris:

(15) *#Hat nur Paul$_F$ den Hund oder die Katze gefüttert?*
has EXCL Paul the dog or the cat fed
Literally: 'Has only Paul$_F$ fed the dog or the cat?'

Comment: Only polarity-question reading available for (15), but not the alternative-question reading.

C. Intervention by the ~-Operator in Scope-Marking Questions

Context (translated from German): Andreas and his parents go on vacation by plane. Each has one suitcase and additionally one piece of hand luggage. At the airport, they try to distract themselves because they have to wait a long time after dropping off their suitcases. They leave their hand baggage while walking around. So, shortly before boarding, no one has their hand baggage anymore and they wonder where they forgot it. They consider several places, but only Andreas thinks that they forgot it in the bathroom.

(16) **Was meint nur Andreas$_F$ wo sie ihr Handgepäck vergessen haben?*
what thinks EXCL Andreas where they their hand.luggage forgotten have
'Where does only Andreas think they have forgotten their hand baggage?'

Conclusion:
Intervention by the ~-operator causes ungrammaticality.

A. Focus Association across a Question

Context (translated from German): Sarah plans her marriage and invites her friends Marie, Phil and Tom. Later on, Phil realizes that he will not be able to come to the wedding ceremony. He asks Tom where the celebration will take place. Unfortunately, Marie was the only one who spoke directly to Sarah and only asked for the place of the wedding ceremony. Tom got the information from her. He answers Phil:

(17) *Marie hat nur gefragt, wo die Trauung$_F$ stattfindet.*
Marie has EXCL asked where the wedding takes.place
'Marie only asked where the wedding$_F$ takes place.'

B. Association with *Q* across an Embedded Question

Context (translated from German): Anna and Beth are taking various courses this semester. Last Semester, Xavier and Anna collaborated on a project. Xavier would like to do that again, so he asks Carl, which courses Anna is taking this semester. Beth and Yusuf also worked well together, so Yusuf asked Carl which courses Beth is taking this semester. Zoe asks Carl:

(18) *Wer hat gefragt, welche Kurse wer besucht?*
who has asked which courses who visits
'Who asked which courses who takes?'

Conclusion:
Intervention by the *Q*-operator does not cause ungrammaticality.

→ Classification of German:

~-Operator:	***Q*-Operator:**
Unselective binder of distinguished variables	**Selective binder of distinguished variables**

B. *Palestinian Arabic (Afro-Asiatic, Semitic)*

Basic word order: SVO
Reference grammars: Isleem (2010); Shlonsky (1997); McLoughlin (1982)

Prerequisites

I. Palestinian Arabic – Questions

Basic *Wh*-Questions (Object Question)

(1) *shu b-t-3mal al-mu3lm-e?*
what IMPFV-FEM-do the-teacher-FEM
'What is the teacher doing?'

Comment: In-situ questions are not possible.

Multiple *Wh*-Questions

Context: Some of your friends (Anna, Polina and Alex) have moved to a different city and you lost track which of your friends now lives in which city. You've got another friend who knows where your friends live. You talk about Anna, Polina and Alex, and then ask your friend:

(2) **miin bu-skun ween?*
who IMP-live where
Intended: 'Who lives where?'

Comment: Multiple *wh*-questions are not grammatical in Palestinian Arabic.

Disjunctive Questions

A. Polar Question

Context: There is a mathematical conference in Hamburg and a lot of mathematicians are invited. Upon arrival at the conference, the invited mathematicians have to register at the entrance. All the mathematicians who came by plane or boat receive a red name tag. All the other mathematicians who did not come by plane or boat get a yellow name tag. A mathematician has just arrived and he wants to register. The lady at the entrance asks him:

(3) *'ajiit fii aT-Tajaara ʿau fii as-safine?*
came(2SG) in the-plane or in the-boat?
'Did you come by plane or boat?'

B. Alternative Question

Context: Your girlfriend wants to go on a journey with you and you have already talked about the plans. In particular, you have talked about two options: you could either go to Paris and have a romantic weekend or you could go to Hamburg and visit your family. Your girlfriend asks you:

(4) *bid-a-k t-ruuH 3laa baariis walla haambuurj?*
like-MASC-2SG 2SG-go(MASC) to Paris or Hamburg?
'Do you want to go to Paris or Hamburg?'

Scope Marking

Context: Mona is sitting in school. Suddenly, her friend Ali gets up and leaves class. Mona knows Ali rather well and she has an idea about where he went. Now, I've got a question for you:

(5) *shu fikrat mona ween raaH 3li?*
what thought Mona where went Ali
'What did Mona think where Ali went?'

***Wh*-Question in situ within Island – Cannot be tested because *wh*-in-situ is not possible.**

II. Palestinian Arabic – Focus

Constituent New Information Focus

Context: 'What did the bear bring?'

(6) *ad-dub jaab al-ʿakil*$_F$
the-bear brought(3SG.MASC) the-food
'The bear brought the food$_F$.'

Comment: Focus is realized by pitch accent.

Focus-Sensitive Particles

A. Exclusive Particle (*bas*)

Context: Zaid and Susan are in a zoo with their children. They have planned to see the giraffes, the elephants and the tigers. Unfortunately, one of the children hurt himself and had to be taken to the hospital. That is why the family could not see all the animals that they originally wanted to see.

(7) *Al awlad bas shafu al fila*$_F$.
the children only saw the elephants
'The children only saw the elephants$_F$.'

Comment: *Bas* (only) is also grammatical to the right of the verb in this example.

Distance Association

Context: A cook has been hired by some criminals to assassinate several people at a dinner party. The cook has poisoned the soup and he accidentally also poisoned the salad. He did not notice that, however.

(8) *At-Tabaach fakar bas in-hu sammam ash-shuuraba*$_F$.
the-cook thinks only that-he poisoned the-soup
'The cook only thinks he poisoned the soup$_F$. (But in fact, he poisoned the soup and the salad.)'

Comment: My informants have also suggested that *bas* can be put right after *in-hu* ('that-he') or in front of *ash-shuuraba* ('the-soup').
According to them, the movement of *bas* does not change the meaning of the sentence.

Association across an Island

Context: Bob had to hire new employees. One requirement for the job was that applicants speak one foreign language. Two men have applied; one of them can speak Japanese, the other one Russian. Also, two women have applied. One speaks Turkish, the other one can speak Azerbaijani. Bob hired both men but not both women…

(9) *Bob bas shaghal al-marra illi b-tHke turke*$_F$
Bob only hired the-woman who IMP-speaks Turkish
'Bob only hired the woman who speaks Turkish$_F$.'

Comment: *Bas* ('only') can be put directly in front of or after the verb *shaghal* ('hired').

Palestinian Arabic – Relative clause islands

(10) **Ay logha Sharif shaghal marra illi b-tHke?*
which language Sharif hired woman who IMP-speaks.
Literally: 'Which language did Sharif hire a woman who speaks?'

Summary Prerequisites:

Prerequisites for testing intervention are met: Distance association with *Q* and ~ is possible.

Intervention effects in Palestinian Arabic

I. Palestinian Arabic – Intervention by the ~-Operator

A. Intervention by the ~-Operator with *wh*-in-situ – Cannot be tested because *wh*-in-situ is not possible.

B. Intervention by the ~-Operator in Alternative Questions

Context: Mahmud is a very nice person and he enjoys eating and drinking. He is not picky when it comes to food or drinks, so he also eats food that other people might find

disgusting. Last week, you (the participant) hosted a party and you offered tea and *maqlubi* [an Arabic rice dish]. One of those two things was very disgusting but you cannot remember which one (you did not feel well that night, which is why you cannot remember it). You do know, however, that Mahmud was the only guest that consumed the disgusting thing. You want to host another party next week and you want to make sure that the disgusting thing will not be offered again. You want to find out what only Mahmud ate because if you know that, then you will know what the disgusting thing was. You ask:

(11) **bas maHmuud 'akal maqluubi walla shirib shaay?*
EXCL Mahmud ate(3SG.MASC) maqlubi or drank(3SG.MASC) tea
'Did only Mahmud eat maqlubi or drink tea?'

(12) *'akal mahmuud maqluubi walla shirib shaay?*
ate(3SG.MASC) Mahmud maqluba or drank(3SG.MASC) tea?
'Did Mahmud eat maqlubi or drink tea?'

Comment: Grammatical AltQ without intervener as control in (12).

C. Intervention by the ~-Operator in Scope-Marking Questions

Context: Mona is sitting in school. Suddenly, her friend Ali gets up and leaves class. Mona knows Ali rather well and she has an idea about where he went. Mona says: "I think that Ali has gone to his locker because he forgot a book there." But all the others say: "No, Ali is so lazy. He has surely gone to the kiosk, or to the playground or to the schoolyard."

(13) **shu fikrat bas mona ween raaH 3li?*
what thought EXCL Mona where went Ali
'What did only Mona think where Ali went?'

Conclusion:
Intervention by the ~-operator causes ungrammaticality.

II. Palestinian Arabic – Intervention by a *Q*-Operator

A. Focus Association Across a Question

Context: Muna is on holidays in Madrid in Spain. She can speak Spanish but she is very shy. She wants to find out where the museum, the cinema and the cathedral are. So she walks to the tourist centre. However, while asking for directions, she blushes because she is so shy. She asks about the weather forecast and then gets mixed up when asking for directions.

(14) *monaa bas sa'ala-t ween al-matHaf*$_F$.
Mona EXCL asked-3SG.FEM where the-museum
'Mona only asked where the museum$_F$ is.'

B. Association with *Q* across and Embedded Question – Cannot test because no *wh*-in-situ.

Conclusion:
Intervention by the *Q*-operator does not cause ungrammaticality.

→ Classification of Palestinian Arabic:

~-Operator: **Unselective binder of distinguished variables**	***Q*-Operator:** **Selective binder of distinguished variables**

C. *Russian (Indo-European, Slavic)*

Basic word order: SVO for transitive and VS for intransitive sentences
Reference grammar: Bailyn (2012)

Prerequisites

I. Russian – Questions

Basic *Wh*-Object Questions

(1) *Čto ty videl v Amerike?*
what(ACC) you saw in America
'What did you see in America?'

Comment: Obligatory *wh*-fronting, except in echo questions.

Multiple *Wh*-Questions

A. Matrix Multiple Question

(2) a. *Kto kogo ljubit?*
who(NOM) who(ACC) loves
'Who loves whom?'

b. **Kto ljubit kogo?*
who(NOM) loves who(ACC)
Intended: 'Who loves whom?'

B. Embedded Multiple Question

(3) a. *Maria sprosila [Q kto čto s"el].*
Maria asked who(NOM) what(ACC) ate

b. *%Maria sprosila [Q kto s"el čto].*
Maria asked who(NOM) ate what(ACC)
Intended: 'Maria asked who ate what.'

Comment: The default strategy is multiple *wh*-fronting. *Wh*-in-situ in matrix *wh*-questions is generally not accepted with one exception among our informants (still marked with * in (2b)). In embedded multiple questions, the requirement on multiple *wh*-fronting is less strict; see Berezovskaya & Howell (2020).

Scope-Marking Questions - Not Attested.

Disjunctive Questions

A. Polar Question

Context: You are not sure whether Ivan drank any hot beverage yesterday. So you ask:

(4) *Ivan včera pil čaj ili kofe? – Da./Net.*
Ivan yesterday drank tea or coffee? – Yes./No.
'Did Ivan drink tea or coffee yesterday? – Yes./No.'

Comment: Note that for the polar question reading, the phonological stress is on the main verb of the sentence.

B. Alternative Question

Context: There is a dance contest in your university. Everyone is supposed to vote for his or her favorite dancer. You want to know for which of your participating friends, Olja or Sveta, Vanja voted. So you ask:

(5) *Vanja progolosoval za Olju ili za Svetu?*
Vanja voted for Olja(ACC) or for Sveta(ACC)
'For which of the two Olja or Sveta did Vanja vote?'

Comment: Note that for the alternative question reading, phonological stress on disjuncts is required.

II. Russian – Focus

Constituent New Information Focus

Context: *Kto byl na večerinke?* ('Who was at the party?')

(6) *Katja$_F$ byla na večerinke.*
Katja was at party(PREP)
'Katja$_F$ was at the party.'

Comment: Russian focus is marked via intonation, and foci can additionally undergo scrambling (this is not required; see Bailyn 2012).

Focus-Sensitive Particles

Exclusive Particle (*tol'ko)*

Context: Since Nastja has forgotten to buy bread during her shopping tour, she asks her daughter Tanja to go to the shop and buy bread and nothing else. Her daughter does exactly what she is asked to.

(7) a. *Tanja kupila tol'ko xleb$_F$.*
Tanja bought EXCL bread(ACC)
'Tanja only bought bread$_F$.'

b. *Tanja tol'ko kupila xleb$_F$.*
Tanja EXCL bought bread(ACC)
'Tanja only bought bread$_F$.'

Comment: *Tol'ko* can occur in a position adjacent to a focused constituent as in (7a), or it can be located at a distance from the focused constituent it associates with as in (7b). The position immediately adjacent to the focused constituent is preferred.

Distance Association with Focus

Context: A cook has decided to poison his guests (because he owes them big sums of money and is afraid of revenge). He decides to put poison into the soup. He doesn't realize,

however, that the poison also gets into the meat and the potatoes that were supposed to be the main dish.

(8) *Vanja tol'ko dumaet, čto otravil sup$_F$.*
Vanja EXCL thinks that poisoned soup(ACC)
'Vanja only thinks that he poisoned the soup$_F$. (He doesn't think that he poisoned the salad.)'

Association with Focus across an Island

Context: Masha is in love with Sergej, one of the candidates running for town mayor. She has only eyes for Sergej and not the other candidates. Petja is one of the deputies who is allowed to vote for his favorite candidate. He votes for Sergej.

(9) *Masha tol'ko ljubit čeloveka, za kotorogo progolosoval Petja$_F$.*
Masha EXCL loves person(ACC) for which voted Petja
'Masha only loves the person who Petja$_F$ voted for.'

Comment: The preferred way would be to put the exclusive particle next to the focused constituent.

Russian – Islands

Relative Clause Island

(10) a. *Sina vstretila čeloveka kotoryj znaet Madonnu.*
Sina met person(ACC) who knows Madonna(ACC)
'Sina met a person who knows Madonna.'

b. **[Kakuju znamenitost']$_i$ Sina vstretila čeloveka kotoryj znaet t_i.*
Which celebritiy Sina met person(ACC) who knows
Literally: '[Which celebrity]$_i$ did Sina meet a person who knows t_i?'

Summary Prerequisites:

Prerequisites for testing intervention are met in Russian for distance association with ~ . Distance association with Q is possible in embedded questions.

Intervention effects in Russian

I. Russian – Intervention by ~

A. Intervention by ~ with *wh*-in-situ

Picture context: Masha has certain information on different people, namely pairs <x,y> such that she knows that Nadja gave x to y. There were different items on the picture that Nadja gave to different people.

(11) **Masha znaet komu tol'ko Nadja$_F$ čto podarila.*
Masha knows who(DAT) EXCL Nadja what(ACC) offered
Literally: 'Masha knows whom only Nadja$_F$ offered what.'

B. Intervention by ~ in alternative questions

Context: There is a dance contest in your university. Everyone is supposed to vote for his or her favorite dancer. There is a friend of yours who is rather disappointed because only Vanja voted for her. You are not sure which one of your friends, Olja or Sveta is the disappointed one. So you ask:

(12) *Tol'ko Vanja progolosoval* [$_{DisjP}$ *za Olju ili za Svetu]?* #*–(Za) Olju. / (Za) Svetu.*
EXCL Vanja voted for Olja(ACC) or for Sveta(ACC) (for) Olja (for) Sveta(ACC)
Intended: 'For which of the two (Olja or Sveta) did only Vanja vote?'

C. Intervention by ~ in scope-marking questions – N/A because Russian lacks scope-marking questions.

Conclusion:
Intervention by ~ causes ungrammaticality.

II. Russian – Intervention by Q

A. Focus Association across a Question

Context: Masha is doing a study on the voting patterns of students. At a party, she meets Petja, Borja and Sonja. Of the three, Petja is the only student, so…

(13) *Masha tol'ko sprosila, za kogo progolosoval Petja*$_F$
Masha EXCL asked for who(ACC) voted Petja
'Masha only asked who Petja$_F$ voted for.' (She is not interested in other people, since they are not students.)

B. Association with *Q* across an Embedded Question (Baker ambiguity)

Context: Masha, Katja, Fedja and Petja are the relevant individuals in the context. We bought a scarf, blue jeans, a dress and a backpack in different shops.

(14) *Kto znaet gde my čto kupili?*
who knows where we what(ACC) bought
'Who knows where we bought what?'
i. For which person x: x knows where we bought what.
A possible answer in our context is: Masha. (Meaning that Masha knows in which shop we bought the scarf, she also knows where we bought all the other items.)
ii. For which person x and which object y: x knows where we bought y.
A possible answer in our context is: Masha knows in which shop we bought the scarf, Petja knows in which shop we bought the backpack, Katja knows in which shop we bought the dress, …

Conclusion: **Intervention by *Q* does not cause ungrammaticality.**	
→ Classification of Russian:	
~-Operator: **<u>Unselective</u> binder of distinguished variables**	***Q*-Operator:** **<u>Selective</u> binder of distinguished variables**

D. *Samoan (Austronesian, Oceanic)*

Basic word order: VSO

Reference grammar: Mosel & Hovdhaugen (1992)

Prerequisites

I. Samoan – Questions

Basic *Wh*-Questions (Object Question)

<u>Context</u>: At her office's annual potluck picnic one of Sina's colleagues, Peter, always brings an interesting dish, so she is very curious to discover what he brought this year. She asks one of the colleagues:

(1) *[ʻO ā] meaʻai na ʻaumai e Pita?*
ALT what thing+eat TAM(past) bring ERG Peter
'Which food did Peter bring?'

Comment: Sentence was not judged acceptable with the *wh*-phrase in situ.

Multiple *Wh*-Questions

<u>Context</u>: Picture depicting a group of boys and girls with arrows indicating who loves whom.

(2) a. *ʻO le fea teine ʻo le fea tama e alofa i ai?*
ALT the which girl ALT the which boy ERG love PREP PRN
Intended: 'Which girls love which boys?'

b. *ʻO ai teine e alofa i ai (ʻo) ai tama?*
ALT what girl TAM love PRE. PRN ALT what boy
Intended: 'Which girls do which boys love?'

Comment: Multiple questions were rejected in favour of paraphrases using simple *wh*-questions.

Disjunctive Questions

A. Polar Question

<u>Context</u>: Tupe has a reputation of being a great lecturer. She usually offers two introductory courses "Basic Samoan" and "Introduction to Polynesian Culture", as well as some more advanced courses. However, in some semesters, Tupe does not offer either introductory level course. Lisa is a student from another department who wants to take one of Tupe's introductory courses this semester (it doesn't matter which one), so she asks:

(3) *E fai e Tupe [le* Basic Samoan *poʻo le* Introduction to Polynesian Culture] *i*
TAM do ERG Tupe the or+ALT the in
le semesa e sau?
the semester TAM come
'Is Tupe teaching (one of) *Basic Samoan* or *Introduction to Polynesian Culture* this semester?'

B. Alternative Question

Context: You went shopping with your friends Ese and Fata. Ese saw two things she wanted to buy: a book and a *lavalava* [cloth garment], but only has enough money for one of them. You have to go home before she decides which one to buy so later that evening, when you see Fata, you ask:

(4) *Na faʻatau e Ese le tusi poʻo le lavalava?*
TAM(past) buy ERG Ese the book or+ALT the *lavalava*
'Did Ese buy the book or the *lavalava*?'
(= 'Which of the book or the lavalava did Ese buy?')

Scope Marking – Not attested.

***Wh*-Question in situ within Island** – Cannot be tested because *wh*-in-situ is ungrammatical.

II. Samoan – Focus

Constituent New Information Focus

Context: At her office's annual potluck picnic one of Sina's colleagues, Peter, always brings an interesting dish, so she is very curious to discover what he brought this year. She asks one of the colleagues: "'O a meaʻai na ʻaumai e Pita?" ('What did Peter bring?') Sina's colleague replies:

(5) *ʻO le talo na ʻaumai e Pita__.*
ALT the taro TAM(past) bring ERG Peter
'Peter brought taro$_F$.'

Comment: Focus marking is realized via fronting the focused constituent and marking it with the particle '*o*. While in situ occurrences of '*o*-marked constituent are reported in the literature (Mosel & Hovdhaugen 1992), our consultants found instances of in-situ '*o*-marking degraded (see also Hohaus & Howell 2015). Phonological focus marking is also available in Samoan to mark information structural focus (see also Calhoun 2015, 2017).

Focus-Sensitive Particles:

A. Exclusive Particle (*naʻo*)

Context: Before her mother comes for a visit, Mele always washes the dishes, cleans the living room and cooks a meal. Today, her mother phoned to say that she was in the area and would drop by in half an hour. Mele did not have enough time to get everything ready, so…

(6) a. *Na'o le mea'ai$_F$ lava na kukaina e Mele ananei.*
only+ALT the thing+eat EMPH TAM(past) cook ERG Mele today
b. *'O ananei, na fai e Mele na'o le mea'ai$_F$.*
ALT today TAM(past) make ERG Mele only+ALT the thing+eat
'Today, Mary only cooked a meal$_F$.'

Comment: Focus-sensitive particle and associate may be fronted or left in situ.

Distance Association – See the example in (7) below.
Comment: Due to the restricted distribution of the exclusive particle, all possible configurations for distance association involve complex NP islands.

Association across an Island
Context: Sina is very well informed. She is always the first to know who has asked whom on a date, and who is in love with whom. That's why, shortly after three girls move to town, some of the boys in the village ask Sina whether she as any information about the new girls. She answers:

(7) *[Na'o le tagata lava [$_{RC}$ e alofa i ai Malia$_F$]] ou te iloa.*
EXCL.+ALT the person EMPH TAM love PREP PRN Mary I TAM know
'I only know the person who Mary$_F$ loves.'

Samoan – Relative Clause Islands

(8) *'O lo'o siva le [teine [$_{RC}$ na talanoa ia ai Malia]].*
TAM(ipfv) dance the girl TAM(past) talk PREP PRN Mary
'The girl who Mary had talked to was dancing.'

(9) **['O ai] 'o lo'o siva le [teine [$_{RC}$ na talanoa ia ai _]].*
ALT who TAM(ipfv) dance the girl TAM(past) talk PREP PRN
Intended: 'Who talked to the girl that is dancing?' (See also Hohaus 2015: 135–139.)

Summary Prerequisites:

Samoan meets the prerequisites to test for intervention effects in a restricted number of environments.

Intervention effects in Samoan

I. Samoan – Intervention by the ~-Operator

A. Intervention by the ~-Operator with *wh*-in-situ – Cannot test due to lack of *wh*-in-situ.

B. Intervention by the ~-Operator in Alternative Questions
Context (translated from Samoan): Sina is very fast. Only a very strong person can be faster than Sina. John says: "I know that I can beat you in a canoe race". So, Sina and John decide to do a canoe race. Peter says: "Sina's going to be the winner". Eseta says: "Sina's going to be the winner". Sina's sister says; "Sina's going to be the winner." But Sina's father says: "John's going to be the winner!" So, they start the canoe race. John wins the competition! Only Sina's father knew who would win the competition.

(10) #*Sa talitonu na'o le tama o Sina 'o le'ā malo [Sina po'o*
TAM(past) believe EXCL+AL. the father of Sina TAM(prosp) win Sina or+ALT
Ioane]?
John
Intended: 'For which of Sina or John did only Sina's Father believe they would win?'

C. Intervention by the ~-Operator in Scope-Marking Questions – Does not apply.

Conclusion:
Intervention by the ~-Operator causes ungrammaticality.

II. Samoan – Intervention by the *Q*-Operator

A. Focus Association Across a Question
Context: During a crime investigation, the police were interested in two questions: Who noticed a certain boat and who noticed a certain car. But there have been developments and there's just one question now that matters, as the police is no longer interested in the boat.

(11) *E tauā na'o le fesili [pe 'o ai sā iloa atu le ta'avale$_F$].*
TAM vital EXCL+ALT the question Q ALT who TAM(past) notice DIR the car
'Only the question who noticed the car$_F$ matters.'

B. Association with *Q* across an Embedded Question – Cannot be tested because *wh*-in situ is not grammatical.

Conclusion:
Intervention by the *Q*-Operator does not cause ungrammaticality.

→ Classification of Samoan:

~-Operator:	***Q*-Operator:**
Unselective binder of distinguished variables	**Selective binder of distinguished variables**

E. *Turkish (Turkic)*

Basic word order: SOV
Reference grammar: Kornfilt (1997a)

Prerequisites

I. Turkish – Questions

Basic *Wh*-Questions (Object Question)

(1) a. *Nilüfer ne-yi hediye et-ti?*
Nilüfer what-ACC gift make-past.3SG
'What did Nilüfer gift?'

b. %*Ne-yi Nilüfer hediye et-ti?*
what-ACC Nilüfer gift make-past.3SG
'What did Nilüfer gift?'

Comment: Optional *wh*-in-situ with a preference for SOV.

Multiple *Wh*-Questions

Context [translated from German]: Your neighbor admires the many gifts your son got for his birthday. For each of the gifts, she wants to know who gave it. She asks:

(2) a. *Kim ne-yi hediye et-ti?*
who what-ACC gift make-past.3SG
'Who gifted what?'

b. %*Ne-yi kim hediye et-ti?*
what-ACC who gift make-past.3SG
'Who gifted what?'

Comment: Preference for *wh*-in-situ.

Disjunctive Questions

A. Polar Question

(3) *Can kahve veya çay iç-ti mi?*
John coffee or tea drink-past.3SG Q
'Did John drink tea or coffee?' ('Yes.'/ 'No.')

B. Alternative Question

(4) *Can kahve mi yoksa çay mı iç-ti?*
John coffee Q or tea Q drink-past.3SG
'Did John drink coffee or tea?' ('Coffee. '/ 'Tea. ')

Scope Marking – Not elicited.

***Wh*-Question in situ within Island**

(5) a. *Berrak [[Aysu'nun yap-tığ-ı] pasta-yı] sev-di.*
Berrak Aysu-GEN bake-NOML-ACC cake-ACC like-past.3SG
'Berrak liked the cake which Aysun baked.'

b. *Berrak [[kim-in yap-tığ-ı] pasta-yi] sev-di?*
Berrak who-GEN bake-NOML-ACC cake-ACC like-past.3SG
Literal: 'Who did Berrak like the cake which _ baked?'
(= 'Who baked the cake which Berrak liked?'

II. Turkish – Focus

New Information Focus

Context: Who is looking for Fatma?

(6) a. *Fatama'yı Ali$_F$ arı-yor.*
Fatma-ACC Ali look-PROG.3SG
'Ali$_F$ is looking for Fatma.'

b. #*Ali$_F$ Fatama'yı arı-yor.*
Ali Fatma-ACC look-PROG.3SG
Intended: 'Ali$_F$ is looking for Fatma.'

Comment: In order for a noun phrase to receive new information focus, however, it must stay in situ and thus in a position immediately before the verb (see also Kural 1993, Özsoy & Göksel 2003, and İşsever 2003, but also Göksel & Özsoy 2003). This type of focus marking in Turkish is thus, both, syntactic and prosodic.

Focus-Sensitive Particles:

A. Exclusive Particle (*sadece*)

Context: Merve, Derin and Talya are in a bookstore. All three of them looked at books, but in the end…

(7) *Sadece Derin*$_F$ *bir kitap satın al-dı.*
EXCL Derin one book purchase buy-past.3SG
'Only Derin$_F$ bought a book.' (See also König 1993 and Kelepir 2001.)

B. Additive Particle (*-dA*)

Context: Esin is going to the movies. Who else is going?

(8) *Handan*$_F$*-da sinema-ya gid-iyor.*
Handan-ADD cinema-DAT go-PROG.3SG
'Handan$_F$, too, is going to the movies.'
(See also Göksel & Özsoy 2003 and Kamali & Karvovskaya 2013.)

C. Scalar Particle (*bile, hatta*)

Context: Meryem is always on a diet.
However, when her mother baked her favorite chocolate cake, Meryem was willing to take a break from dieting:

(9) *Mereyem*$_F$ *bile bir parka kek ye-di.*
Meryem SCL one piece cake eat-past.3SG
'Even Meryem$_F$ ate one piece of cake.'

(10) *Hatta Mereyem*$_F$ *bir parça kek ye-di.*
SCL Meryem one piece cake eat-past.3SG
'Even Meryem$_F$ ate one piece of cake.'

Distance Association

A. Exclusive Particle (*sadece*)

Context: A cook was hired to assassinate several people at a dinner party, with either arsenic or rat poison. Without noticing, he however adds both to the stew that he is planning to serve. Yet…

(11) *Aşçı [sadece [[güvec-e arsen*$_F$ *ekle-diğ-in-i] sanı-yor]].*
cook EXCL stew-ABL arsenic add-NOML-POSS.3SG-ACC think-PROG.3SG
'The cook only thinks that he added arsenic$_F$ to the stew.'

B. Additive Particle (*-dA*)

Context: A cook was blackmailed into assassinating several people at a dinner party. In order to work up the courage for the deed, he got really drunk and lost track of the poisons he added to the stew that he was planning to serve. He thinks that he added rat poison, but…

(12) a. #/*Aşçı [[güvec-e arsen$_F$ ekle-diğ-in-i] de] sanı-yor.
cook stew-ABL arsenic add-NOML-POSS.3SG-ACC ADD think-PROG.3SG
Intended: 'The cook also thinks that he added arsenic$_F$ to the stew.'

b. Aşçı [[güvec-e [arsen$_F$ de] ekle-diğ-in-i] sanı-yor].
cook stew-ABL arsenic ADD add-NOML-POSS.3SG-ACC think-PROG.3SG
'The cook also thinks that he added arsenic$_F$ to the stew.'

C. Scalar Particle (*bile*)

Context: A cook was blackmailed into assassinating several people at a dinner party. He plans on doing so by adding a fast-acting and untraceable poison in his stew. However, in order to work up the courage for the deed, he got really drunk, and now…

(13) a. #/*Aşçı [[güvec-e Arsen$_F$ ekle-diğ-in-i] bile] sanı-yor.
cook stew-ABL arsenic add-NOML-POSS.3SG-ACC SCL think-PROG.3SG
Intended: 'The cook even thinks that he added arsenic$_F$ to the stew.'

b. Aşçı güvec-e [Arsen$_F$ bile] ekle-diğ-in-i sanı-yor.
cook stew-ABL arsenic SCL add-NOML-POSS.3SG-ACC think-PROG.3SG
'The cook even thinks that he added arsenic$_F$ to the stew.'

Comment: Both, the additive and the scalar particle appear to need to be adjacent to the focused constituent.

Association across an Island

A. Exclusive Particle (*sadece*)

(14) ?[Sadece [[Mary'nin Peter'a$_F$ tanıt-tığ-ı] kişi-yi] tanı-yor-um.
EXCL Mary-GEN Peter-DAT introduce-NOML-ACC person-ACC know-PROG-1SG
'I only know the person whom Mary introduced to Peter$_F$.'

(15) [Mary'nin Peter'a$_F$ tanıt-tığ-ı] kişi-yi tanı-yor-um sadece.
Mary-GEN Peter-DAT introduce-NOML-ACC person-ACC know-PROG-1SG EXCL
'I only know the person whom Mary introduced to Peter$_F$.'

Turkish – Relative Clause Islands

(16) *[Hasan-ın [[__ geçen yaz ben-i gör-en] kişi-ler]-i
Hasan-GEN last summer PRN.1SG-ACC see-PART person-PL-ACC
tanı-dığ-ı] ada
know-NOML-ACC island
Intended: 'the island such that Hasan knows the people who saw me there last summer' (Kornfilt 1997b: p. 29, no. (13))
(See also Kornfilt 1984; Kornfilt, Kuno & Sezer 1980, and Kornfilt 1997b.)

Summary Prerequisites:

Turkish meets the prerequisites to test for intervention.

Intervention effects in Turkish

I. Turkish – Intervention by the ~-Operator

A. Intervention by the ~-Operator with *wh*-in-situ

Context [translated from German]: You're working as an assistant at the medical center. Your neighbor's son Berat is a doctor there. Your neighbor tries to find out about his patients, and she is particularly interested in those that in the past have preferred to be treated by no one but her son. She asks you:

(17) a. ??/*Sadece $Berat_F$ kim-ler-i tedavi et-ti?
EXCL Berat who-PL ACC treatment make-past.3SG
Intended: 'Who did only $Berat_F$ treat?'

b. Kim-ler-i sadece $Berat_F$ tedavi et-ti?
who-PL-ACC EXCL Berat treatment make-past.3SG
'Who did only Berat treat?'

B. Intervention by the ~-Operator in Alternative Questions

(18) *Sadece Can kahve mi yoksa çay mı iç-ti?
EXCL John coffee Q or tea Q drink-past.3SG
Intended: 'Of coffee and tea, which did only John drink?'

C. Intervention by the ~-Operator in Scope-Marking Questions – Does not apply.

Conclusion:
Intervention by the ~-Operator causes ungrammaticality.

II. Turkish – Intervention by the ~-Operator

A. Focus Association Across a Question

Context: A notorious thief is finally caught after a robbing a wealthy business man of a large amount of money and jewels of substantial value, which he then sent to different accomplices. Surprisingly, at the trial, the judge does not seem interested in the jewels:

(19) Hakim [sadece [[hırsız-ın $para\text{-}yi_F$ kim-e yolla-dığ-ın-ı]
judge EXCL thief-GEN money-ACC who-DAT send-NOML-POSS.3SG-ACC
sor-du]].
ask-past.3SG
'The judge only asked who the thief sent the $money_F$ to.'

Context: Yesterday, Şehriban and her sister Selina went shopping for clothes. Surprisingly, their aunt Meryem does not seem interested in what Selina bought.

(20) Meryem [sadece [[dün $Şehriban\text{-}in_F$ ne al-dığ-ın- ı sor-du]].
Meryem EXCL yesterday Şehriban-GEN what buy-NOML-POSS.3SG-ACC ask-past.3SG
'Meryem only asked what $Şehriban_F$ bought yesterday.'

B. Association with *Q* across an Embedded Question

(21) *Kim [Tolga'nın ne-yi ner-den al-dığ-ın-ı] bil-iyor?*
who Tolga-GEN what-ACC where-ABL buy-NOML-POSS.3SG-ACC know-PROG.3SG
'Who knows where Tolga bought what?'
i. *Işıl.*
ii. *Işıl Tolga'nın elbise-yi ner-den al-dığ-ın-ı bil-iyor,…*
Işıl Tolga-GEN dress-ACC where-ABL buy-NOML-POSS.3SG-ACC know-PROG.3SG
'Işıl knows where Tolga bought the dress, …'

Conclusion:
Intervention by the *Q*-Operator does not cause ungrammaticality.

→ Classification of Turkish:

~-Operator:	***Q*-Operator:**
Unselective binder of distinguished variables	**Selective binder of distinguished variables**

F. *Yoruba (Niger-Congo, Volta-Niger)*

Basic word order: strict SVO
Reference grammars: Bamgbose (2000); Awobuluyi (1978); Adesola (2005)

Prerequisites

I. Yoruba – Questions

Basic Wh-Questions (Object Question)
Context: You come home and see that your flatmate Ade has been shopping. (There are some of his shopping bags on the table). You ask:

(1) *Ki ni Ade ra?*
what FOC Ade buy
'What did Ade buy?'

Comment: *Wh*-fronting is obligatory.

Multiple Wh-Questions
Context: Your family has recently been on vacation. (You had to stay home and work.) They all bought different souvenirs to take home. When they get back you ask:

(2) a. **Ta ni o ra ki (ni)*
who FOC PRN buy what (FOC)
b. **Ta ni ki ni o ra*
who FOC what FOC PRN buy
Intended: 'Who bought what.'

Comment: Multiple questions are reported in the literature on Yoruba (Adesola 2005). Consultants involved in this study uniformly rejected multiple questions.

Scope-Marking Questions – Not attested.

Disjunctive Questions

A. Alternative Question

Context: Your friend has a very lavish wedding celebration planned. You are wondering which side of the family paid for such a big party. You ask:

(3) *Ṣe awọn alabaatan oko-afesona tabi alabaatan iyawo afesona ni o sanwo*
Q PL relatives groom or relatives bride FOC PRN pay
igbeyawo na?
wedding the
'Which of the bride's family or the groom's family paid for the wedding?'
#'Did (one of) the bride's family or the groom's family pay for the wedding?'

B. Polar Question

Context: You are at a very lavish wedding celebration. You know that neither the groom's family nor the bride's family is very rich so you wonder if the wedding was paid for by one of them, or someone else.

(4) *Ṣe awọn alabaatan oko-afesona tabi alabaatan Iyawo-afesona sanwo igbeyawo na?*
Q PL relatives groom or relatives bride pay wedding the
'Did (one of) the bride's family or the groom's family pay for the wedding?'
'Which of the two families paid for the wedding?'

Comment: See Howell (2016) for a detailed discussion.

Wh-Question in situ within Island – Cannot be tested due to absence of *wh*-in-situ.

II. Yoruba – Focus

Constituent New Information Focus

Context: *Kini Ade ra?* (What did Ade buy?)

(5) *Eja ni Ade ra*
fish FOC Ade buy
'Ade bought fish_{F}.'

Comment: Focus marking is realized via fronting the focussed constituent and marking with the particle *ni*. Fronting and ni-marking obligatorily co-occur (i.e. fronting is not possible without ni-marking and vice-versa). Fronted constituents may be DPs or CPs, and can be larger than the narrow focus itself, if the narrow focus is not able to undergo fronting for syntactic reasons.

Focus-Sensitive Particles:

A. Exclusive Particle (*nikan*)

Context: You gave your husband Ade a list of foods to pick on the way home, but he forgot the list. When he gets home you see:

(6) a. *Eja nikan ni Ade ra*
fish EXCL FOC Ade buy
'Ade only bought fish$_F$.'
b. **Eja nikan Ade ra.*
c. **Ade nikan ra Eja.*
d. **Ade ra Eja nikan.*

Comment: Exclusive particles can only associate with fronted nominal or clausal constituents.

B. Focus-Sensitive Negation (*kọ*)

Context: You find a window broken and believe it must have been done by one of the neighborhood kids. But, it can't be your neighbor's daughter Adebimpe since she was away visiting her aunt this week…

(7) *Adebimpe kọ ni o fo ferese.*
Adebimpe NEG(foc.sen) FOC PRN break window
'It was not Adebimpe$_F$ who broke the window.'

Distance Association:

Context: I was talking to my friend Ade about our mutual friend Tunji who has recently made a lot of money. Ade told me that Tunji was spending money left and right, buying all kinds of expensive things. Ade said that Tunji even bought a house in Ibadan. Later, I learned from another friend of mine that, not only did Tunji buy a house in Ibadan, he also bought a house in Lagos! I must have looked surprised because my friend then said: "You look surprised! I thought Tunji had already told you all about it!" I reply:

(8) *Tunji ra ile ni Ibadan nikan ni Ade sọ fun mi. Ko sọ pe Tunji tun ra*
Tunji buy house in Ibadan EXCL FOC Ade tell to me NEG tell that Tunji also buy
ile ni Ekọ
house in Lagos
'Ade only told me that Tunji bought a house in Ibadan$_F$. He didn't say that Tunji also bought a house in Lagos!'

Comment: Distance association with focus inside a fronted clause or NP is possible.

Association across an Island:

Context: You and your friends just finished taking the final exam for your history class. You are talking about which questions you were able to answer on the exam. You think you did well on most of the exam. For the most part, you were able to answer all the questions, but there was a really difficult portion of the exam asking about the dates when different presidents were in power. Students were asked to name the dates when Nelson Mandela, Charles de Gaulle and Theodore Roosevelt were president. After the exam, you tell your friend:

(9) *Igba ti Nelson Mandela se Aare nikan ni mo dahun.*
time REL Nelson Mandela be President EXCL FOC 1.SG answer
'I only answered the time that Nelson Mandela$_F$ was president.'

Yoruba – Islands

Relative Clause Island

Context: You are talking with a colleague about a woman your boss, Bolu, recently hired to work in the communications department at your company. You say: (a). Later that afternoon, your colleague has already forgotten what language Bolu's new hire speaks. He asks: (b). You answer (c).

(10) a. *Bolu gba obinrin ti o le so Ede Hausa si ise*
Bolu took woman REL PRN can speak language Hausa for job
'Bolu hired a/the woman who can speak Hausa for the job'

b. **Ede wo ni Bolu gba obinrin ti o le so si ise.*
language which ALT Bolu take woman REL PRN can speak for job
'For which language, did Bolu hire a/the woman who can speak it?'

c. **Ede Hausa ni Bolu gba obinrin ti o le so si ise.*
language Hausa ALT Bolu take woman REL PRN can speak for job
'Bolu hired a/the woman who can speak Hausa_{F} for the job'

Summary Prerequisites:

Yoruba meets the prerequisites to test for intervention effects in a restricted number of environments.

Intervention effects in Yoruba

I. Yoruba- Intervention by ~

A. *Wh*-in-situ – Cannot be tested because *wh*-in-situ is not possible.

B. Intervention by ~ in Disjunctive Question

i. **Intervention by exclusive (*nikan*)**

Context: You know that only one of your two sisters Taiwo or Kehinde will go to Lagos, but you're not sure which of the two will go. You ask your mother:

(11) a. *Ṣe Taiwo tabi Kehinde ni o ma lọ si Eko?*
Q Taiwo or Kehinde FOC PRN FUT go to Lagos
'Which of Taiwo or Kehinde went to Lagos?'

b. *#Ṣe Taiwo tabi Kehinde nikan ni o ma lọ si Eko?*
Q Taiwo or Kehinde EXCL FOC PRN FUT go to Lagos
Intended interpretation # 'For which of Taiwo or Kehinde is it true that only they will go to Lagos?'
Available interpretation: 'It is the case that only Taiwo or Kehinde will go to Lagos?'

ii. **Intervention by negation (*kọ*)**

Context: A window breaks while your daughters Taiwo and Kehinde are playing outside. They both come in and swear it was the other one. Your neighbor was outside and saw the event. You want to know who is the one telling the truth, so you ask her:

(12) a. *Ṣe Taiwo tabi Kehinde ni o fọ ferese?*
Q Taiwo or Kehinde FOC PRN break window
'Which of Taiwo or Kehinde broke the window?'

b. **Ṣe Taiwo tabi Kehinde ko ni o fo ferese?*
Q Taiwo or Kehinde NEG FOC PRN break window
Intended: 'Which of Taiwo or Kehinde didn't break the window?'

C. Intervention by ~ in Scope-Marking Questions – N/A because Yoruba lacks scope marking

Conclusion:
Intervention by ~ causes ungrammaticality.

II. Yoruba – Intervention by Q

A. Focus Association Across a Question

Context: Kemi is the younger sister of Tunji and Olu. She thinks her brother Olu is the coolest and wants to do everything just like him: read all the same books he reads, play all the same sports he plays, etc. She thinks Tunji is cool too, but not quite as cool as Olu. Today I was out shopping with Kemi to get her a new book to read. When she was thinking about which book to buy, she asked me which book Olu was reading and which book Tunji was reading. I was only surprised that she asked which book Tunji was reading, but not surprised that she asked which book Olu was reading.

(13) ?*Pe Kemi beere Iwe wo ni Tunji n ka nikan l' o ya mi lenu.*
that Kemi ask book which FOC Tunji PROG read EXCL FOC PRN open my mouth.
'It only surprised me that Kemi asked which book Tunji is reading.'
(Ko ya mi lenu pe o beere Iwe wo ni Olu n ka.)
NEG open my mouth that she ask book which FOC Olu PROG read.
'It didn't surprise me that she asked which book Olu is reading.'

Comment: Speakers varied in the extent to which they accepted this sentence.

B. Association with Q across and Embedded Question – Cannot test because *wh*-in-situ not possible.

Conclusion:
Intervention by Q does not cause ungrammaticality.

→ Classification of Yoruba:

~-Operator:	***Q*-Operator:**
Unselective binder of distinguished variables	**Selective binder of distinguished variables**

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