Presuppositions in focus

by

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Abstract

This dissertation explores how presuppositions and focus interact. It takes as its starting point a puzzle about expressions like \textit{even} and its crosslinguistic kin in declarative sentences that deny presuppositions: these focus-sensitive scalar additive operators can be used in negative presupposition denials but not in positive ones. This puzzle reveals that i) presuppositions triggered within focus alternatives matter, and ii) \textit{even} triggers an additive presupposition. The rest of the thesis considers what these findings can teach us about other areas of the grammar. It presents a variety of arguments in defence of \textit{even}’s additive presupposition, which has long been a point of controversy, and shows that \textit{even}’s additivity helps to make sense of some surprising behaviour that \textit{even} displays outside of presupposition denials. It also argues that the distribution of \textit{even} and \textit{any} in imperatives and modal statements lends support to views that treat imperatives as containing an existential modal operator that is sometimes strengthened by exhaustification to yield universal readings.

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Chapter 1

Introduction

Language allows discourse participants to share information with each other. This dissertation is about how two natural language tools for structuring the flow of information in discourse – namely, focus and presupposition – interact. The goal of this chapter is to provide general background on these two phenomena that will underpin the rest of the dissertation, and present an outline of how the rest of the dissertation will unfold.

1.1 Presuppositions

Presuppositions signal what is taken for granted in a discourse context. For example, a speaker who utters the sentence in (1) will be heard as taking for granted that there is a unique king of France, and presenting as new information that that individual is bald.

(1) The king of France is bald.
    \[\sim\] There is a unique king of France. presupposition
    \[\sim\] The king of France is bald. assertion

The two inferences in (1) interact with embedding operators differently. While the inference that the king of France is bald disappears under negation, in questions, and in the antecedents of conditionals, the inference that there is a unique king of France survives; this is illustrated in (2)-(4) below.
(2) The king of France isn’t bald.
   There is a unique king of France.
   The king of France is bald.

(3) Is the king of France bald?
   There is a unique king of France.
   The king of France is bald.

(4) If the king of France is bald, there must be a royal wigmaker.
   There is a unique king of France.
   The king of France is bald.

This special behaviour on the part of presuppositions is called projection; presuppositions are special because they project out of embedded contexts. This section will describe the theory of presuppositions that will be assumed to account for the special properties of presuppositions in the rest of this dissertation.

1.1.1 Presuppositions in discourse

Following Stalnaker (1970, 1974, 1978, 1998) and much subsequent work, I will assume that information-seeking discourse can be modelled as a cooperative enterprise whereby participants build up a store of information that may help them to narrow down the set of possible candidates for the actual world.

On the Stalnakerian view, this enterprise proceeds by having conversational participants add information to the common ground of the conversation, a set of propositions that the participants in a conversation mutually agree to take to be true. This set of propositions corresponds to a set of possible worlds, the context set, which contains all and only the worlds where all of the propositions in the common ground are true.

When a sentence is asserted and accepted by the other discourse participants, the proposition that it denotes is added to the common ground, and any worlds incompatible with it are removed from the context set. Some sentences require that certain propositions are already part of the common ground in order to successfully update the context; these propo-
sitions are presuppositions.

Presuppositions can be modelled as definedness conditions – that is, as preconditions for a sentence being interpreted or receiving a bivalent truth value of 1 (true) or 0 (false) (Heim & Kratzer 1998). Certain expressions (possessives, definite descriptions, and factive predicates, to name a few) trigger presuppositions; these expressions are modelled as partial functions, and their partiality projects to become definedness conditions of the sentences that contain them. These definedness conditions yield the requirement that presuppositions be part of the common ground according to the bridging principle in (5).

(5) **Stalnaker’s Bridge**

Partial or three-valued propositions can only be used to update a body of information if all worlds compatible with that body of information are such that the proposition gives a (non-stigmatized) truth-value to them.

When the context set contains worlds where what is presupposed is false, the context cannot be successfully updated with a sentence that triggers this presupposition (cf., e.g., Stalnaker 1973, 1978). The following section will explore what options are available to discourse participants in the face of this kind of conversational breakdown.

1.1.2 When discourse goes wrong

Unfortunately, very few real-world discourses look like Stalnaker’s idealized information exchanges. There are many ways in which discourses can go wrong. Natural language provides ways of flagging objections to discourse moves, and these tools are sensitive to the grounds for the objection.

If a discourse participant says something that their interlocutor believes to be false, as in (6-A), the interlocutor is licensed to confront them about the fact that they have said something false, as in (6-B) or (6-B’)

---

1This is not the only way of encoding presuppositions. Another view that will become relevant in Chapter 5 is the two-dimensional view, wherein presuppositions exist as bivalent propositions on a separate dimension from the assertive component of meaning.
B: That’s not true!
B': No she isn’t!

In the absence of any such objection, Speaker B will be taken to be assenting to Speaker A’s proposal to add the proposition that the queen of England is bald to the common ground; from that point forward, Speaker B will be committed to treating that proposition as true.

If a discourse participant says something that is not guaranteed to be defined with respect to the current common ground – that is, that presupposes something that is not part of the common ground – their interlocutor has other options. Firstly, the speaker may accommodate the presupposition. Accommodation is a process by which, as von Fintel (2008) puts it, “the context is adjusted quietly and without fuss to accept the utterance of a sentence that imposes certain requirements on the context in which it is processed” (137). When a presupposition is accommodated, it is added to the common ground so that the sentence that was uttered can be used to update the context. However, there are at least two kinds of situations in which an interlocutor might not undertake accommodation in response to a presupposition failure. If the presupposition is too controversial to be added to the common ground quietly and without fuss,2 the interlocutor may lodge a formal complaint and demand that the speaker take responsibility for the information that they incorrectly tried to treat as mutually taken for granted. One famous tool for objecting to presuppositions is the Hey, wait a minute; I didn’t know that challenge (von Fintel 2004; see also Shanon 1976), illustrated in (7).

(7) A: I need to take my pet giraffe to the vet.
B: Hey, wait a minute; I didn’t know that you have a pet giraffe!

This response creates the opportunity for Speaker A to respond with an overt assertion of the presupposed material, proffering it for Speaker B’s approval before it is added to the common ground.

2 Or if the interlocutor is just unusually pedantic.
common ground but is in fact false, Speaker B may instead assert a denial of the offending presupposition. One way of doing this is illustrated in (8).

(8) A: The king of France is bald.
    B: The king of France isn’t bald; there is no king of France!

This dissertation will discuss a special way of marking denials of presuppositions with focus-sensitive operators.

1.2 Focus

Focus is a tool for organizing the flow of information in discourse. It plays a central role in governing the relationship between questions and answers; answers must be focus-marked in a way that corresponds to what is asked (Paul 1880, Halliday 1967, i.a.). This is shown in (9)-(10); focus marking (\([_]_F\)) is realized in English by intonational prominence, indicated below by SMALL CAPS, on a (possibly non-proper) subpart of the focus-marked constituent. Other strategies for marking focus crosslinguistically include word order changes, for example in Hungarian, and dedicated focus morphemes, as in Somali.

(9) a. Who ate the apple?
    b. [SAM]_F ate the apple.

(10) a. What did Sam eat?
    b. Sam ate [the APPLE]_F.

The question in (9-a), which asks for the identity of the person doing the eating, can be appropriately answered by a sentence with focus on Sam, as in (9-b). The question about the identity of the thing being eaten in (10-a) can be answered by a sentence with focus on the object the apple, as in (10-b). However, the answers to the two questions cannot be switched; (9-b) is not an appropriate answer to the question in (10-a), and (10-b) is not an appropriate answer to the question in (9-a). In models of discourse that treat conversational moves as responses to (often unspoken) questions (e.g., Roberts 2012), focus marking plays
an essential role in allowing language users to reconstruct the relationship between what is said and the discourse as a whole; because focus marking must match up with what is questioned, it provides a cue for identifying implicit questions that discourse moves are intended to address.

Enforcing question-answer congruence is not the only role played by focus in language. Certain lexical items, such as the English adverbs *even* and *only*, have meanings that make reference to focus. These items are sensitive to the placement of focus marking; for example, the (a) sentences in (11)-(12) mean something different from the (b) sentences (Jackendoff 1972 and much subsequent work).

(11) a. I only introduced \([\text{BILL}]_F\) to Sue.
    b. I only introduced Bill to \([\text{SUE}]_F\).

(12) a. I even introduced \([\text{BILL}]_F\) to Sue.
    b. I even introduced Bill to \([\text{SUE}]_F\).

### 1.2.1 Alternative semantics

I will assume the framework of Alternative Semantics for focus developed by Rooth (1985, 1992). In this framework, focus introduces a set of alternatives to constituents that bear it. Alternatives to larger structures containing the focused constituent are then built up compositionally.

The focus alternatives for a declarative sentence will be a set of propositions; Rooth describes these as the set of propositions that could be derived from the sentence that is pronounced by making substitutions within the focused constituent. On this view, any constituent of the same semantic type as the focused constituent should be an eligible substitution. However, Fox & Katzir (2011) have argued that it is necessary to constrain these possibilities so that focus alternatives do not end up being structurally more complex than the prejacent they are derived from, except under very special circumstances. They propose that there are three ways of being an eligible substitution: (i) being an element of the lexicon, (ii) being a subtree of the original structure, or (iii) being a contextually salient constituent. Only route (iii) allows the resulting focus alternatives to be more complex than
the structure from which they are derived.

Returning to question-answer congruence, Rooth proposes that the set of propositions denoted by a question must be a subset of the focus alternatives of the answer. A subject wh-question like (9-a) denotes a set of propositions of the form \( x \text{ ate the apple} \), as shown in (13-a); thus, the focus alternatives of its answer must likewise be a set of propositions of the form \( x \text{ ate the apple} \). The response in (9-b) has focus on its subject; its focus alternatives will be a set of propositions of the form \( x \text{ ate the apple} \), as shown in (13-b), making it a congruent answer to the question. In contrast, the response in (10-b) has focus on its object; its focus alternatives will be a set of propositions of the form \( \text{Sam ate x} \), as shown in (13-c). As the set of propositions denoted by the question is not a subset of the focus alternatives of (10-b), (10-b) is not a congruent answer to the question.

\[
\begin{align*}
\text{(13) a. } & \quad [[\text{Who ate the apple?}]]^{\omega, q} = \left\{ \begin{array}{l}
\text{Sam ate the apple,} \\
\text{Alex ate the apple}
\end{array} \right. \\
\text{b. } & \quad \text{Alternatives for } [\text{Sam}]_F \text{ ate the apple} = \left\{ \begin{array}{l}
\text{Sam ate the apple,} \\
\text{Alex ate the apple}
\end{array} \right. \\
\text{c. } & \quad \text{Alternatives for } \text{Sam ate [the apple]}_F = \left\{ \begin{array}{l}
\text{Sam ate the apple,} \\
\text{Sam ate the pear}
\end{array} \right.
\end{align*}
\]

Rooth (1992) argues that focus-sensitive operators do not make use of the full semantic value of the sentences in which they appear; instead, they always make reference to a subset of the focus alternatives that are in principle derivable from their prejacent. That is, focus-sensitive operators, like quantifiers over individuals, worlds, and times, have domain restrictions. Rooth argues that the subset of focus alternatives that focus-sensitive operators quantify over, \( C \), is the set of alternatives that are contextually salient or relevant. It has been variously proposed that \( C \) is anaphoric to a question that is salient in the discourse, relevant to the Question Under Discussion (QUD), or simply equivalent to the QUD, which itself determines what is relevant in context (see Rooth 1992, Roberts 2012, and Beaver et al. 2017, respectively).

\[\text{3} \text{Here and throughout the rest of the dissertation, "propositions of the form } x \text{ ate the apple" should be taken as a slightly sloppy shorthand for "propositions expressed by sentences of the form } x \text{ ate the apple", to borrow the more precise phrasing of Karttunen (1977).}\]
1.2.2 Focus-sensitive operators

Note that in Rooth’s semantics focus-sensitive operators operate on propositional alternatives. However, focus-sensitive operators can have non-propositional sisters in the overt syntax.

(14)  a. Mary only talked to [one]F person.
     b. Mary talked to only [one]F person.

(15)  a. Mary even solved the [hardest]F problem.
     b. Mary solved even the [hardest]F problem.

In the (a) sentences, *even* and *only* appear at the edge of vP. vP contains the original position of the subject, meaning that this is a propositional constituent. In the (b) sentences, however, *even* and *only* appear next to DPs. Following Erlewine (2017), I will refer to instances of *even* and *only* that take a propositional constituent as their sister (as in the (a) sentences) as sentential *even* and *only* and instances of *even* and *only* that take DPs as their sister (as in the (b) sentences) as constituent *even* and *only*.

Although sentential and constituent *even* appear in different positions, next to different kinds of sisters, the (a) and (b) sentences appear to mean the same thing. Following Hirsch (2017), I will assume that focus-sensitive operators always operate on propositional constituents; that is, the prejacent of *even* and *only* is always a proposition, and the set of focus alternatives is always a set of propositions. Hirsch proposes that focus-sensitive operators have a bipartite structure composed of two heads, one of which marks the position where the operator is interpreted and the other of which is a semantically vacuous marker that appears as close as possible to the focus-associate. In English, either head may be pronounced. On this view, both sentences in (14) have the structure in (16), and differ only in which head is pronounced.

---

4See Erlewine (2014a(b)) for a theory of how focus-sensitive operators do (or do not) associate with traces/lower copies of moved constituents.

5See Iatridou & Tatevosov (2016) for reasons to revise this view.

6Hirsch’s discussion of focus-sensitive operators is restricted to *only*, but I believe that his arguments carry over to *even*, at least for cases that do not involve embedding.
1.2.3 Even

This dissertation will explore puzzles related to the focus-sensitive operator even and its relatives in other languages.

Following Karttunen & Peters (1979), Rooth (1985), and much subsequent work, I will assume that even is a truth-conditionally vacuous focus-sensitive expression that introduces two presuppositions, as in (17).

\[(17) \quad [[\text{even}]^\eta,w] = \lambda C_{<s,t>} \cdot \lambda p_{<s,t>} \cdot \forall q \in C \ [q \neq p \rightarrow p <_w q] \land \\
\exists q \in C \ [q \neq p \land q(w) = 1]. p(w)\]

According to this denotation, even takes two arguments: a prejacent \(p\) (the proposition in the scope of even) and a set of propositions \(C\) (a contextually salient subset of \(p\)'s focus alternatives, which are the structures derivable from \(p\) by making substitutions of the appropriate type for the focused constituents). When supplied with these arguments, even introduces two definedness conditions: i) a scalar presupposition, that the prejacent is less likely or more noteworthy \(<_w\) than any other alternative in \(C\), and ii) an additive presupposition, that there is some alternative in \(C\) besides the prejacent that is true.\(^7\) When defined, even returns the prejacent unchanged.

To see how this works in practice, let us work through how the presence of even in (18) yields the two inferences in (18-a) and (18-b).

\[(18) \quad \text{Dorcas even talked to [Philomena]_F.}\]

a. Of the relevant people under discussion, Philomena is the least likely/most noteworthy person for Dorcas to have talked to.

b. There is someone other than Philomena that Dorcas talked to.

\(^7\)The quantificational force of these presuppositions and the precise nature of the scale are subjects of debate in the literature. As far as I can tell, nothing that I discuss hinges on the particular choices made here. The existence of the additive presupposition has been challenged; this will be addressed in detail in Chapter 3.
The sentence in (18) will have an LF as in (19-a); in a context where Philomena, Dorabella, and Geraldine are salient, *even* will have access to the set of focus alternatives as in (19-b).

(19)  
\[
\begin{align*}
\text{Dorcas even talked to [Philomena]_f.} \\
\text{a. LF: even}_C [\text{Dorcas talked to [Philomena]_f}] \\
\quad \begin{cases} 
\text{Dorcas talked to Philomena,} \\
\text{Dorcas talked to Dorabella,} \\
\text{Dorcas talked to Geraldine}
\end{cases} \\
\text{b. } C = \begin{cases} 
\text{Dorcas talked to Dorabella,} \\
\text{Dorcas talked to Geraldine}
\end{cases}
\end{align*}
\]

The scalar presupposition of *even* will be satisfied just in case the prejacent is less likely than any of the other alternatives – that is, just in case it is less likely that Dorcas talked to Philomena than that Dorcas talked to Dorabella, and it is less likely that Dorcas talked to Philomena than that Dorcas talked to Geraldine; this is the inference in (18-a). The additive presupposition will be satisfied just in case at least one of the non-prejacent alternatives is true – that is, just in case Dorcas talked to Dorabella and/or Geraldine; this is the inference in (18-b). When defined, (19) is true if and only if Dorcas talked to Philomena.

As noted in Section 1.1, presuppositions are usually immune to the effects of negation (and other embedding operators) thanks to their projective profile. In light of this, it is surprising that the presuppositions of *even* appear to be different when *even* surfaces in downward-entailing environments instead of upward-entailing ones. This is illustrated for negation in (20).

(20)  
\[
\begin{align*}
\text{Dorcas didn’t even talk to [Philomena]_f.} \\
\text{a. Of the relevant people under discussion, Philomena is the most likely/least noteworthy one for Dorcas to have talked to.} \\
\text{b. There is someone other than Philomena that Dorcas didn’t talk to.}
\end{align*}
\]

There are two proposals on the market to deal with these puzzling facts: the scope theory and the ambiguity theory.

The scope theory, advanced by Karttunen & Peters (1979), holds that the presuppositions in (20) differ from those in (18) because *even* is interpreted in a different position.
More particularly, the claim is that *even* can take scope over downward-entailing operators\(^8\) even when it surfaces below them. On this view, a sentence like (20) has an LF as in (21-a); this will yield the set of alternatives in (21-b).

\[(21)\quad \text{Dorcas didn’t even talk to [Philomena]}_F.\]

\[a. \quad \text{LF: } \text{even}_C \left\{ \text{NEG [Dorcas talked to [Philomena]}_F] \right\} \]

\[b. \quad C = \left\{ \begin{array}{l} \text{NEG [Dorcas talked to Philomena]}, \\
\text{NEG [Dorcas talked to Dorabella]}, \\
\text{NEG [Dorcas talked to Geraldine]} \end{array} \right\} \]

C = \left\{ \begin{array}{l}
\text{Dorcas didn’t talk to Philomena,} \\
\text{Dorcas didn’t talk to Dorabella,} \\
\text{Dorcas didn’t talk to Geraldine} \end{array} \right\}

The scalar presupposition of *even* will be satisfied just in case the prejacent is less likely than any of the other alternatives – that is, just in case it is less likely that Dorcas didn’t talk to Philomena than that she didn’t talk to Dorabella, and it is less likely that Dorcas didn’t talk to Philomena than that she didn’t talk to Geraldine. The likelihood of not talking to someone is inversely proportional to the likelihood of talking to that person. The predicted scalar presupposition is therefore equivalent to a requirement that it is more likely that Dorcas talked to Philomena than that she talked to Dorabella, and more likely that Dorcas talked to Philomena than that she talked to Geraldine; this is the inference in (20-a). The additive presupposition of *even* will be satisfied just in case at least one of the non-prejacent alternatives is true – that is, just in case Dorcas didn’t talk to Dorabella and/or she didn’t talk to Geraldine. This is the inference in (20-b). When defined (21) is true if and only if Dorcas didn’t talk to Philomena.

The ambiguity theory, advanced by Rooth (1985), takes *even* to be lexically ambiguous. On this view, there are two *evens* in English; one with the lexical entry already seen in (17), and one with the lexical entry given in (22). The latter differs from the former in the direction of the scalar presupposition and in the truth value required of the non-prejacent alternative by the additive presupposition. Furthermore, the latter *even* is stipulated to be

\(^8\)Crnič (2014b) presents evidence that this generalization should include non-monotonic operators as well.
an NPI, meaning that it is restricted to downward-entailing environments.\textsuperscript{9}

\begin{equation}
[[\text{even}_{\text{NPI}}]]^{q,w} = \lambda C_{st,t} \cdot \lambda p_{s,t} \cdot \forall q \in C [q \neq p \rightarrow q <_w p] \land \\
\exists q \in C [q \neq p \land q(w) = 0]. p(w)
\end{equation}

On this view, a sentence like (20) has an LF as in (23-a) and encounters a set of alternatives as in (23-b).

(23) Dorcas didn’t even talk to [Philomena]$_F$.

\begin{itemize}
  \item a. LF: \text{NEG} [\text{even}_{\text{NPI}} [\text{Dorcas talked to [Philomena]$_F$}]]
  \begin{align*}
  C = \left\{ & \begin{array}{ccc}
  \text{Dorcas talked to Philomena,} \\
  \text{Dorcas talked to Dorabella,} \\
  \text{Dorcas talked to Geraldine}
  \end{array} \right.
  \end{align*}
  \end{itemize}

The scalar presupposition of even$_{\text{NPI}}$ will be satisfied just in case the prejacent is more likely than any of the other alternatives – that is, just in case it is more likely that Dorcas talked to Philomena than that Dorcas talked to Dorabella, and more likely that Dorcas talked to Philomena than that Dorcas talked to Geraldine. This presupposition, which is precisely the inference in (20-a), projects across negation to become a presupposition of the entire sentence. The additive presupposition of even$_{\text{NPI}}$ will be satisfied just in at least one of the non-prejacent alternatives is false – that is, just in case case Dorcas did not talk to Dorabella and/or Dorcas did not talk to Geraldine; this presupposition will likewise project, yielding the inference in (20-b). When defined, (23) is true if and only if Dorcas didn’t talk to Philomena.

The scope theory and the ambiguity theory make equivalent predictions for sentences with and without negation. They likewise make equivalent predictions for other kinds of downward-entailing environments, like \textit{doubt}, \textit{few}, and so on. Arguments for and against these theories have partly hinged on aesthetic properties: namely, whether it is more attractive to assume an accidental, systematically related homophony, or to assume that even

\textsuperscript{9}Different versions of the ambiguity theory have emerged over the years, and the status of the additive presupposition varies among them. Arguments for and against the additive presupposition will be discussed in Chapter 3.
can take scope in a different clause from the one where it is pronounced.\textsuperscript{10} However, there are also empirical points where the two theories diverge. One is the behaviour of \textit{even} in non-monotonic environments. As Crnič (2014a,b) observes, NPIs are licensed in non-monotonic environments, but entailments are not reversed, meaning that the predicted presuppositions under the scope theory and the ambiguity theory are no longer equivalent. Crnič (2014b) shows that the observed presuppositions generated by \textit{even} in non-monotonic environments are those predicted by the scope theory, not the ambiguity theory. The second is cases where \textit{even} is spelled out in a downward-entailing environment and, if \textit{even} takes scope above the downward-entailing operator, it also gains access to other material. For example, consider the following example, loosely translated from Lahiri (2008), where \textit{even} is embedded in a conditional antecedent.

\begin{equation}
\text{(24) If [you read even [The National Enquirer]\textsubscript{\textit{F}}] you will learn something.}
\end{equation}

Intuitively, the scalar contribution of \textit{even} here does not concern the likelihood of reading The National Enquirer; instead, it concerns the likelihood of learning something from reading The National Enquirer. The scope theory of \textit{even} predicts that \textit{even} can take scope outside of the conditional antecedent; from that position, where it will be able to generate the appropriate alternatives. On the ambiguity theory, however, \textit{even} is predicted to be be interpreted within the antecedent of the conditional, making it impossible for the scalar presupposition to convey information about the relation of the antecedent to the consequent.\textsuperscript{11}

I will assume the scope theory from this point forward both for ease of presentation and because I believe that it is the correct theory (for English, at least). Where relevant, I will point out how the predictions of the scope theory and the ambiguity theory do or do not

\textsuperscript{10} Crosslinguistic evidence from languages that spell out \textit{even} differently in NPI-licensing environments and non-NPI-licensing environments has also been raised; while these data form a compelling argument that the ambiguity theory is correct for those languages, this does not mean that the ambiguity theory is correct for English.

\textsuperscript{11} One frequently-raised objection to the scope theory hinges on the mechanism that was originally proposed for giving \textit{even} non-surface scope, namely covert movement. The objection in question is that the covert movement required by the scope theory is exceptional; it does not leave a trace, and it is not sensitive to island constraints. For example, it can escape from antecedents of conditionals in cases like (24). However, what (24) teaches us is that \textit{even} simply does take scope outside of the antecedent of the conditional; there is no other way to explain the attested reading. It should also be noted that this objection about covert movement is an objection to a particular island-sensitive method of scope-taking; the scope theory could in principle be compatible with other scope-taking machinery that is not sensitive to islands.
1.3 Outline

With this background securely in our back pockets, it is now time to move on to the main event.

In Chapter 2, I will present a puzzle about *even* in sentences that deny presuppositions. I will propose a solution to this puzzle that crucially relies on the additive presupposition of *even* and presuppositions triggered within focus alternatives.

In Chapter 3, I will present a variety of arguments in favour of the existence of *even*'s additive presupposition, and will show that the alleged evidence against its existence does not show what it is claimed.

In Chapter 4, I will explore how an additive semantics for *even* allows us to make progress on understanding a different area of the grammar, namely imperatives.

Chapter 5 concludes with a summary of the main findings of the thesis and reflects on what presupposition denials with *even* might be able to teach us about variation among presupposition triggers in future research.
Chapter 2

Even and presupposition denial

2.1 Introduction

This chapter identifies a puzzle about how even and its crosslinguistic kin behave in sentences that deny presuppositions. Section 2.2 lays out the puzzle. Section 2.3 proposes a solution that relies crucially on the additive presupposition of even. Section 2.4 explores crosslinguistic predictions of the proposed account. Section 2.7 identifies and attempts to tidy miscellaneous threads left hanging by the account.

2.2 The puzzle

Even can be used in declarative sentences that deny presuppositions. For example, in (1), Speaker A presupposes, by her use of the presupposition trigger quit, that Radu used to smoke, and Speaker B denies that presupposition with a sentence that contains even.

(1) A: When did Radu quit smoking? ~ Radu used to smoke
    B: He didn’t even smoke!

This use of even is subject to a curious restriction: even can only be used in presupposition denials if it is embedded under an appropriate downward-entailing operator, as shown

\footnote{The main text focuses on sentential negation as the relevant downward-entailing operator. Other operators that show this asymmetry include NegDPs and downward-entailing operators like few. Other downward-entailing operators include those that require a vacuous presupposition, such as all, that, and some.}
below for denials of the existence presupposition of the possessive Kenji’s wife (2), the prestate presupposition of the change-of-state verb open (3), and the additive presupposition of again (4).

(2) A: Did Kenji’s wife come to the picnic? ~ Kenji has a wife (i.e. is married)
B: Kenji isn’t even married!
B’: #Kenji’s even unmarried/a bachelor!

(3) A: Open the window. ~ The window is closed
B: It isn’t even closed!
B’: #It’s even open (already)!

(4) A: Marisa was late for class again. ~ Marisa has been late before
B: She’s never even been late before!
B’: #She’s even always been on time before!

This asymmetry does not follow from known properties of even or of presupposition denial. It is not a general property of even that it is incompatible with positive sentences. When the positive string from (2) is uttered in a context where it does not deny a presupposition, as in (5), the result is felicitous.

(5) Context: Alex keeps falling for married men. Tomo wants to intervene.

I think Derek would be great for Alex. (He’s really sweet, and) he’s even unmarried!

Likewise, positive sentences are not generally incompatible with presupposition denial; if entailing operators, like doubt, also license what appears to be the same use of even, as shown in (ii); however, note that I doubt that Kenji is even married, just like I doubt that Kenji is married, denies the status of the presupposition that Kenji has a wife as common ground material on the grounds that the speaker does not believe it to be true, but not on the grounds that the speaker believes (or knows) it to be false.

(i) A: Mary opened all of the windows.
B: None/Few of the windows were even closed!
B’: #All/Many of the windows were even open (already)!

(ii) A: Did Kenji’s wife come to the picnic?
B: I doubt that Kenji is even married!
even is removed from the sentences above in presupposition-denying contexts, the asymmetry disappears, as illustrated in (6).

(6) A: Did Kenji’s wife come to the picnic? \(\sim\) Kenji has a wife (i.e. is married)  
B: (But/What are you talking about?! \(\sim\) ) Kenji isn’t married!  
B’: (But/What are you talking about?! \(\sim\) ) Kenji’s unmarried/a bachelor!

Taken together, these facts suggest that the contrast between positive and negative presupposition denials with even reflects neither a property of presupposition denials nor of even alone, but rather a property of how even and presupposition denial interact.

2.3 Proposal

In this section, I will propose a solution to the puzzle outlined in Section 2.2 above that derives the contrast between positive and negative presupposition denials with even from properties of even and properties of presupposition denial.

Our first task is to determine what is focused in the sentences we are examining. Sentences like (2) are prosodically ambiguous. As the predicate bears prosodic prominence, the focus-associate of even must minimally consist of the predicate; however, this prosody is also consistent with even focusing a proposition-sized constituent containing the original vP-internal copy of the subject, as shown schematically in (7).²

(7) Kenji isn’t even MARRIED!
   
   a. Possible LF: even\textsubscript{c} \[\text{NEG} \left[\text{Kenji is} \left[\text{MARRIED}\right]_F\right]\]
   b. Possible LF: even\textsubscript{c} \[\text{NEG} \left[\text{Kenji is} \underline{\text{MARRIED}}\right]_F\]

I will assume that in the presupposition denials we are considering even associates with a proposition-sized constituent, as in (7-b). In Section 2.6.1, we will consider what would happen if we instead took the focus associate to be restricted to the VP, as in (7-a).

²Erlewine (2014b) develops a theory of how association with traces should work, one which ends up having to say something similar to what I propose here about how even interacts with presuppositions triggered below it. The relevant properties of Erlewine’s proposal will be discussed in Section 2.6.
Now we must decide what focus alternatives are salient. If we assume that *even* associates with proposition-sized constituents, this means the alternatives that *even* makes reference to will be derived from the prejacent by making substitutions for this proposition-sized constituent. In the contexts that we are considering, the discourse move made by Speaker A will make certain propositions particularly salient, and thus particularly attractive as substitutions.³ For example, if Speaker A’s move was to ask a polar question like (8-a), this will make salient the set of possible answers denoted by the question, given in (8-b).⁴ If Speaker A’s move was to ask a wh-question like (9-a), the salient propositions will again be the set of possible answers, given in (9-b). Farkas & Bruce (2009) argue that the default responses to polar questions (i.e., *p?*) and declaratives (i.e., *p*) are the same: *yes* or *no*, which are equivalent to asserting *p* and ¬*p*, respectively.⁵ I will therefore assume that, if Speaker A’s move was to utter a declarative like (10-a), the propositions *{Kenji’s wife came to the picnic, Kenji’s wife did not come to the picnic}* will again be made salient, as in (10-b).

(8)  
a. Did Kenji’s wife come to the picnic?  
b. *{Kenji’s wife came to the picnic,*  
   *Kenji’s wife didn’t come to the picnic}*

(9)  
a. Who invited Kenji’s wife to the picnic?  
b. *{Danielle invited Kenji’s wife to the picnic,*  
   *Emilia invited Kenji’s wife to the picnic,*  
   *...}*  

(10)  
a. Kenji’s wife came to the picnic.  
b. *{Kenji’s wife came to the picnic,*  
   *Kenji’s wife didn’t come to the picnic}*

Crucially, in each case the propositions made salient by Speaker A’s discourse move contain

---
³As we will see, my proposal requires something stronger: that these are the only substitutions that make it into the contextually salient set of alternatives. More on this later.
⁴I will assume that polar questions denote (and thus make salient) both their positive and their negative answer, but nothing hinges on this choice: the proposal would work exactly the same way if we assumed instead that polar questions make salient only the positive answer (i.e., the proposition that forms the root of the question).
⁵We could just as well assume that only the proposition that is pronounced is made salient; as with polar questions, the presence of the negative alternative is not crucial.
the trigger (here, *Kenji’s wife*) for the presupposition that the prejacent denies. When these propositions are used as substitutions for the focused constituent, the resulting alternatives will likewise bear the presupposition that the prejacent denies. This is shown for negative and positive presupposition denials of (2) in (11) and (12), respectively.

(11) Kenji isn’t even married!

a. LF: even\textsubscript{c} [NEG [Kenji is married]]

\[
\begin{aligned}
\text{NEG [Kenji is married],} \\
\text{#Kenji’s wife didn’t come to the picnic,} \\
\text{#Kenji’s wife came to the picnic}
\end{aligned}
\]

b. \[C = \begin{aligned}
\text{NEG [Kenji’s wife came to the picnic],} \\
\text{NEG [Kenji’s wife didn’t come to the picnic]}
\end{aligned}\]

\[
\begin{aligned}
\text{Kenji isn’t married,} \\
\text{Kenji’s wife didn’t come to the picnic,} \\
\text{Kenji’s wife came to the picnic}
\end{aligned}
\]

(12) #Kenji’s even unmarried!

a. LF: even\textsubscript{c} [Kenji is unmarried]

\[
\begin{aligned}
\text{Kenji is unmarried,} \\
\text{#Kenji’s wife came to the picnic,} \\
\text{#Kenji’s wife didn’t come to the picnic}
\end{aligned}
\]

b. \[C = \begin{aligned}
\text{Kenji’s wife came to the picnic,} \\
\text{Kenji’s wife didn’t come to the picnic}
\end{aligned}\]

\[
\begin{aligned}
\text{Kenji is unmarried,} \\
\text{Kenji’s wife came to the picnic,} \\
\text{Kenji’s wife didn’t come to the picnic}
\end{aligned}
\]

It is difficult to say how the scalar presupposition should be evaluated here, since the prejacent and the non-prejacent alternatives are defined for different sets of worlds.\textsuperscript{6} When it comes to the additive presupposition of *even*, the situation is clearer. In both the negative and the positive presupposition denial, the non-prejacent alternatives will be undefined

\textsuperscript{6}Erlewine (2014b) proposes for independent reasons that the scalar presupposition does not look at the non-prejacent alternatives directly but rather looks at the result of locally accommodating presuppositions triggered within these alternatives. This would allow us to compute the scalar presupposition of *even* even when the alternatives are defined for different sets of worlds. This proposal is not dissimilar from what I will propose shortly; I invite the reader to suspend their curiosity about the scalar presupposition for one more page. Crucially, as we will see, it is the additive presupposition of *even* decides the fate of these examples once all of the machinery is in place.
(i.e., presupposition failures) whenever the prejacent is true. This means that the additive presupposition of *even*, which requires that there is a non-prejacent alternative that is true, cannot be satisfied; we therefore predict both positive and negative presupposition denials with *even* to be infelicitous, contrary to fact. Although we have not yet derived the desired asymmetry, we now have a better idea of what is needed: we need a way of preventing the non-prejacent alternatives from being presupposition failures just in case they contain negation.

It turns out that a tool with exactly this profile has already been argued for on independent grounds to account presupposition denials quite independently of *even*. This tool is Bochvar’s 1939 meta-assertion operator, A—a silent operator with the truth table in (13).

\[
\begin{array}{c|c}
\phi & A(\phi) \\
\hline
T & T \\
F & F \\
# & F
\end{array}
\]

(13) Truth table for A operator (Beaver & Krahmer 2001: 152)

The A operator asserts that the proposition it applies to is true. When it applies to a proposition that carries a presupposition, what it takes for that proposition to be true is that both its presupposition and its assertive meaning are true; an A operator applied to a proposition that carries a presupposition therefore has the effect of conjoining the presupposition with the assertion of that proposition and asserting that both are true, as schematized in (14) for a propositional expression \( \phi \) that carries a presupposition \( \pi \).

\[
A(\phi_\pi) = A(\pi) \land A(\phi) = A(\pi \land \phi)
\]

(14) (Beaver & Krahmer 2001: 153)

Thus, the A operator in effect turns presuppositions into part of the asserted meaning.

While presuppositions cannot be targeted by sentential negation, asserted material can. An A operator placed under negation will therefore render any presuppositions triggered below it negatable. Beaver & Krahmer (2001) observe that this property of the A operator can be exploited to make sense of presupposition denials like (15).\footnote{There are other ways of accounting for data like (15), such as local accommodation (Heim 1983) and}
(15) The king of France isn’t bald... There is no king of France!

The fact that this sentence is acceptable is surprising. The definite description the king of France in the first clause triggers the presupposition that there is a (unique) king of France. If we assume a structure as in (16-a), the presupposition of the first clause will be incompatible with the assertion of the second clause. Beaver & Krahmer (2001) observe that if we parse the first clause with a silent A operator below negation as in (16-b), its presupposition will become part of the asserted content. This allows the presupposition to be negated instead of projected; the whole structure in (16-b) will be equivalent to the negated conjunction It is not true that [there is a unique king of France and that individual is bald]. This in turn makes the first clause perfectly compatible with the continuation in the second clause, hence the observed acceptability.8

(16)   a.  NEG [the king of France is bald]
         
       b.  NEG [A [the king of France is bald]]

With the A operator in hand, all that is needed to derive our asymmetry is to assume that there is a parse of the presupposition denials we have been considering that includes an A operator. Let us assume that, in negative presupposition denials, the A operator is inserted below negation, as in (17-a).9 This will result in a set of alternatives as in (17-b), where each alternative contains an A operator under negation.

(17)  Kenji isn’t even married!

   a.  LF: evenC [NEG [A [Kenji is married],]]

8The distribution of the A operator should be restricted; otherwise, we might expect presupposition projection to be much less robustly attested than it actually is. I will not provide a theory of the A operator’s distribution here. For the analysis to work, all that is needed is that the A operator is at least sometimes licensed under negation to prevent unsatisfied presuppositions from projecting. In this case, the A operator ensures that the speaker is not heard to be asserting and presupposing contradictory things. It could be that the A operator is a last resort rescue mechanism, licensed in just these kinds of cases, or it could be that the A operator has a somewhat broader distribution, but its distribution should not be unconstrained.

9We will return to this positional stipulation shortly.
In positive presupposition denials, inserting an A operator does not help. If we assume an LF as in (18-a), the resulting alternatives will be as in (18-b). Like the alternatives in (17-b), these alternatives all contain an A operator, but unlike the former, the latter contain no higher negation. This means that the presupposition that Kenji has a wife triggered in the non-prejacent alternatives will be asserted rather than negated, yielding propositions that are false and therefore unable to satisfy the additive presupposition of even.

(18)  #Kenji’s even unmarried!

a. LF: even\textsubscript{C} [A [Kenji is unmarried]]\textsubscript{F}
   \[
   \begin{array}{l}
   \neg A [\text{Kenji is unmarried}], \\
   A [\text{Kenji’s wife came to the picnic}], \\
   A [\text{Kenji’s wife didn’t come to the picnic}] \\
   \end{array}
   \]

b. C = \[
   \begin{array}{l}
   It’s true that Kenji is unmarried, \\
   It’s true that Kenji has a wife and she came to the picnic, \\
   It’s not true that Kenji has a wife and she didn’t come to the picnic \\
   \end{array}
   \]

2.4 Crosslinguistic extensions

We have seen that the polarity-based asymmetry in presupposition denials with even can be fruitfully reduced to properties of even (namely, its additive presupposition) and properties of presupposition denial (namely, the alternatives made salient in presupposition-denying discourses). These ingredients are not restricted to English. This section will explore crosslinguistic predictions of the proposal.
2.4.1 A familiar pattern

The polarity-based asymmetry observed in Section 2.2 for English even is reproduced for even-like items in Russian (daže), Greek (kan), and German (überhaupt), as shown in (19)-(21) below.\(^{10}\)

(19) **Russian**\(^ {11}\)

A: A žena Kenji prixodila na piknik?
   PART wife Kenji.GEN came to picnic
   ‘Did Kenji’s wife come to the picnic?’

B: ?Da on daže ne ženat.
   DA he DAZE NEG married
   ‘He isn’t even married!’

B’: #Da on daže xolostyak.
   DA he DAZE unmarried

(20) **Greek**

A: I gineka tu Kenji irthe sto piknik?
   the wife the.GEN Kenji.GEN came to-the picnic
   ‘Did Kenji’s wife come to the picnic?’

B: Ma then ine kan pandremenos!
   but NEG is KAN married
   ‘But he isn’t even married!’

B’: *Ma ine kan anipandros!
   but is KAN unmarried

(21) **German**

A: Ist Kenjis Frau zum Picknick gekommen?
   is Kenji-GEN wife to-the picnic come-PTCP-PRF
   ‘Did Kenji’s wife come to the picnic?’

B: Er ist überhaupt nicht verheiratet!
   he is ÜBERHAUPT NEG married

---

\(^{10}\)Other languages that display the same pattern include Vietnamese and Malayalam; like Russian, these languages use garden-variety scalar additive items (*thăm chí* and *poclum*, respectively) in these presupposition denials.

\(^{11}\)Native speakers of Russian report that voobšče, an even-like item with a similar profile to überhaupt, can be used instead of daže in presupposition denials. However, judgments vary considerably between speakers. Some can use this item on its own and report a contrast in the same direction as the other languages examined here; others can use this item on its own and report no contrast. There are also speakers who require that voobšče be accompanied by the particle -to in presupposition denials; when -to is present, both positive and negative presupposition denials are acceptable.
‘He isn’t even married!’

B’: #Er ist überhaupt unverheiratet!
he is ÜBERHAUPT unmarried

All of these items are even-like in that their meanings include both i) a scalar requirement, that the prejacent is a remarkable value on a contextually salient scale, and ii) an additive requirement. that the prejacent is not the only true alternative. Let us confirm each of these properties in turn.

First, let us establish that all of these items are scalar. Duže is the Russian counterpart of English even, and patterns with it in all relevant respects. Greek has several even items, of which kan is one. Kan is often translated into English as so much as, as shown in (22); it has the distribution of an NPI, meaning that it is restricted to downward-entailing environments (Giannakidou 2007).

(22) Metaniosa pu aniksa kan to vivlio.
regret.1sg that opened.1sg KAN the book
‘I regret that I so much as opened the book.’ (Giannakidou 2007: 60)

Its infelicity in positive sentences is thus unsurprising but nevertheless fits with the broader crosslinguistic pattern.

German, like Greek, has several even-like items. Überhaupt does not mean even; it is translated as absolutely, to a high degree in positive environments and at all in negative environments, and is characterized by Anderssen (2006) as a generalized domain widener.12 Crucially for our purposes, überhaupt picks out scalar endpoints, just as even does.

(23) a. Meine Mutter kennt (überhaupt) jeden in Mindelheim.
my mother knows ÜBERHAUPT everybody in Mindelheim
‘My mother knows (absolutely) everybody in Mindelheim.’

(Anderssen 2006: 62)

b. Von solchen Leuten kann man selten (überhaupt) etwas lernen.
from such people can one rarely ÜBERHAUPT something learn
‘It’s rare that you can learn anything (at all) from such people.’

12 This can be thought of as even associating with (sub)domains of a quantificational element (cf. Chierchia 2013).
To see that all of these items are additive, it suffices to show that they are infelicitous in contexts where their prejacent is incompatible with all of the salient alternatives. To test this, we will use the medals scenario employed by Schwarz (2005) in his study of German *evens*. World knowledge tells us that one can only win one medal in a given event. If Mary won a silver medal, then, she did not win a bronze medal or a gold medal.

(24) A: Masha vyigrala bronzovuyu medal’.
    ‘Masha won a bronze medal.’

    B: #Net! Ona daže vyigrala [serebryanuyu] medal’!
    ‘No she DAZE won silver medal

(25) A: Maria hat eine Bronzemedaillle gewonnen.
    ‘Maria won a bronze-medal won

    B: #Nein! Maria hat Überhaupt eine [Silbermedaille] gewonnen!
    ‘No Maria has UBERHAUPT a silver-medal won

*Daže* and *überhaupt* are infelicitous in these examples, suggesting that they have an *even*-like additive component.

A straightforward translation of the medals examples to Greek will not tell us whether *kan* is additive, because *kan* requires a negative environment. Nevertheless, we can construct examples like (26), where Alex is the only individual who Sam did not talk to, which show that *kan* is unacceptable when its prejacent is the only true alternative.

(26) Context: *Sam talked to everyone at the party, with one notable exception.*

#Den mflise kan me ton [Álex]_

NEG talked KAN to the Alex

Thus, these items appear to be *even*-like in having both a scalar and an additive component. We can therefore import our analysis of the presupposition denials with English *even* to account for these cases.
2.4.2 Predictions

If the contrast between positive and negative presupposition denials with scalar additive particles is due to their additive presupposition, we can make a testable prediction: An item that is scalar like even but lacks an additive component will be able to appear in both positive and negative presupposition denials.

I would like to suggest that Hebrew bixlal is such an item. Bixlal is reported to have an even-like scalar component, although it does not mean even; Greenberg & Khrizman (2012) and Greenberg (2016) show that bixlal has a similar profile to überhaupt, as shown in (27).13

\[
\begin{align*}
(27) \quad & a. \quad \text{Dani lo nexmad bixlal.} \\
& \quad \text{Danny not nice BIXLAL} \\
& \quad \text{‘Danny is not nice at all.’} \quad \text{(Greenberg & Khrizman 2012: 139)} \\
& b. \quad \text{Hu bixlal nexamad.} \\
& \quad \text{he BIXLAL nice} \\
& \quad \text{‘He is nice in general (to everyone).’} \quad \text{(Greenberg & Khrizman 2012: 144)}
\end{align*}
\]

In examples like (28), bixlal can be translated as even. On the scale of places that are difficult to visit from Massachusetts that is made salient in (28),14 bixlal picks out the most noteworthy (i.e. most distant) alternative, as shown in (28-a) and (28-c). It cannot pick out the least noteworthy (i.e. least distant) alternative, as demonstrated by the unacceptability of (28-b) and (28-d).15

\[
(28) \quad \text{Context: The Greens live in Boston, Massachusetts. They are complaining that their three grown-up children all live too far away to visit easily.}
\]

13Greenberg & Khrizman (2012) argue that bixlal is best understood as a generalized strengthenener rather than a generalized domain widener as Anderssen (2006) proposes for überhaupt. This distinction need not worry us; it is the strengthening component of domain wideners that is alleged to resemble the scalar component of even.

14Special thanks to Itai Bassi and Danny Fox for their help in constructing this example. Amherst here refers to Amherst, Massachusetts, and Ontario to the Canadian province.

15The judgements here are delicate, as difficulty of visiting far-flung children depends partly on the mode of transport considered. For example, if the mode of transport to all three destinations is assumed to be by plane, and it is known that it is easier to fly to Israel than it is to fly to a small town like Amherst, it will no longer be more difficult to visit Jan than Ann.
a. Ann gara be-Amherst, Dan gar be-Ontario, ve Jan gar **bixlal**
   Ann lives in-Amherst Dan lives in-Ontario and Jan lives BIXLAL
   be-Israel!
   in-Israel
   ‘Ann lives in Amherst, Dan lives in Ontario, and Jan even lives in Israel!’

b. **Jan gar be-Israel, Dan gar be-Ontario, ve Ann gara bixlal**
   Jan lives in-Israel Dan lives in-Ontario and Ann lives BIXLAL
   be-Amherst!
   in-Amherst

   c. Ann lo gara be-Boston, Dan lo gar be-arcot ha-brit, ve Jan
   Ann NEG lives in-Boston, Dan NEG lives in-states the-united and Jan
   bixlal lo gar ba-xeci ha-ze shel ha-kadur!
   BIXLAL NEG lives in-half the-this of the-globe
   ‘Ann doesn’t live in Boston, Dan doesn’t live in the United States, and Jan
   doesn’t even live in this hemisphere!’

   d. **Jan lo gar ba-xeci ha-ze shel ha-kadur, Dan lo gar be-arcot
   Jan NEG lives in-half the-this of the-globe Dan NEG lives in-states
   ha-brit, ve Ann bixlal lo gara be-Boston!**
   the-united and Ann BIXLAL NEG lives in-Boston

Unlike the even-like items we have seen up to this point, **bixlal** is compatible with mutually-
exclusive alternatives, as shown in (29); this suggests that it lacks an additive component.

(29) **Context:** B is a journalist doing a feature on bronze medallists. A is trying to help
think of people for B to interview.

   A: Mary won a bronze medal. (So you should talk to her.)
   B: Lo! Hi (bixlal) zaxta (bixlal) be-medalyat [kesef]F (bixlal).
      NEG she BIXLAL won BIXLAL in-medal silver BIXLAL
      ‘No! (What are you talking about?) She won a silver medal.’

As predicted, **bixlal** can appear in both positive and negative presupposition denials.

(30) A: Ishto shel Kenji ba’a la-piknik?
      wife of Kenji came to the-picnic
‘Did Kenji’s wife come to the picnic?’

B: **Hu bixlal** lo nasuy!
  he BIXLAL NEG married
  ‘He isn’t even married!’

B’: **Hu bixlal** ravak!
  he BIXLAL bachelor
  ‘(What are you talking about?) He’s a bachelor!’

Thus, the proposal, which holds that the additive presupposition of *even* is responsible for its infelicity in positive presupposition denials, is supported crosslinguistically.

### 2.5 Why *even*?

So far we have seen reasons why *even* is sometimes ruled out in presupposition denials. But we have not yet addressed why *even* is such a natural addition to those presupposition denials where it is acceptable. Officially, the scalar and additive presuppositions are trivially satisfied in negative presupposition denials, because the prejacent entails its alternatives. This means that *even* should not be contributing any informative inference. Yet presupposition denials with *even* and its crosslinguistic kin feel different from presupposition denials that lack these items. Furthermore, all of the focus-sensitive items that appear in the presupposition denials that we have discussed share a scalar semantics. Is this a coincidence, or is there some deeper connection between scalarity and presupposition denial that the proposed account is missing?

A connection between scalarity and presupposition denial has been proposed before, in Iatridou & Tatevosov’s (2016) analysis of *even* in presupposition-challenging questions. Section 2.5.1 will consider connections between scalarity and presupposition denial in questions and weigh the possibility of making scalarity an integral ingredient in the presupposition denials that we have been considering. Section 2.5.2 will suggest a way of understanding *even* as adding weight to the objection made by presupposition denials without altering the core proposal.
2.5.1 Scalarity and presupposition denial

What might an account of presupposition-challenging discourse moves with *even* that gives a central role to *even*’s scalar presupposition look like?

Iatridou & Tatevosov (2016) describe a use of *even* in questions, illustrated in (31),

(31) A: Let’s meet at Oleana for dinner. Is that okay?
B: Where is that *even*? (Iatridou & Tatevosov 2016: 298)

They observe that the presence of *even* in (31) triggers an uncancellable inference of extreme ignorance to the effect that Speaker B does not know the first thing about Oleana.17 Importantly for our purposes, they suggest that what *even* does in (31) can be thought of as a kind of presupposition denial. More particularly, they argue that there is a general felicity condition on asking questions, namely that one does not ask questions of people who are not equipped to answer them. Thus, Speaker A’s discourse move presupposes that Speaker B is equipped with enough information about Oleana to answer the Question Under Discussion (QUD). By displaying extreme ignorance, Speaker B demonstrates that this is not the case.

Iatridou & Tatevosov (2016) argue that in the cases under consideration *even* takes scope over and focus-associates with the entire question.18 The resulting set of alternatives will be a set of questions that are salient in the discourse; in this case, questions about Oleana. When applied to this set of alternatives, *even* presupposes that the prejacent question is the least likely of these alternatives, where the relevant notion of likelihood is likelihood of being asked or askable in the discourse context.

Iatridou & Tatevosov (2016) derive extreme ignorance by reasoning about the likelihood of making discourse moves as follows: i) the likelihood of asking a question is inversely proportional to the likelihood of knowing its answer; ii) therefore, cooperative

---

16They also discuss polar questions, where *even* has the additional effect of biasing the question toward the negative answer (cf. Guerzoni 2004).
17Oleana is a restaurant in Cambridge.
18They propose that *even* can have a higher type than is usually assumed, taking a question as its prejacent and a set of questions as its focus alternatives.
speakers do not sincerely ask for information that they already know; iii) by marking a question as the least likely to be asked, Speaker B also marks it as the most likely to have its answer be known, iv) the fact that Speaker B asked this question shows that they do not know the answer to the question they are most likely to know the answer to. This, Iatridou & Tatevosov (2016) claim, licenses the inference that Speaker B does not know the answer to any of the other, more difficult questions that are relevant in the discourse, meaning that Speaker B is in a state of extreme ignorance.

Iatridou & Tatevosov (2016) show that this phenomenon is attested for *even*-like items not just in English but also in Russian, Greek, and German. Thus, *even*-like scalar items show up in presupposition-challenging discourse moves in both declaratives and questions in multiple languages.

There is a clear family resemblance between presupposition-challenging questions and declaratives with *even*; in both cases, a sentence with *even* is used to object that some precondition for another speaker’s discourse move to be felicitous is not met. However, the two accounts differ in the role that *even* plays. As we have seen, in Iatridou and Tatevosov’s 2016 account, *even* is responsible for deriving the presupposition-denying effect; the scalar presupposition of *even* acts at the level of discourse moves to produce extreme ignorance, and that extreme ignorance challenges Speaker A’s presupposition that Speaker B knows enough to answer the QUD. In the story for declaratives presented here, the presupposition-denying effect comes from the prejacent, not from *even; Kenji isn’t married* challenges the presupposition that Kenji has a wife just as well as *Kenji isn’t even married* does.

Iatridou & Tatevosov’s (2016) idea of *even* operating at the level of discourse moves could be generalized to cover declaratives as follows: perhaps what *even* is really doing in both the questions and the declaratives that we have been discussing is marking them as

---

19Iatridou & Tatevosov (2016) note that *daže* cannot appear in presupposition-challenging questions; instead, *voobšče* is used. As we saw earlier, *daže* can appear in declarative presupposition denials. One possible explanation for this difference could be that *daže* cannot have the higher type needed to combine with questions.

20Iatridou & Tatevosov (2016) claim that German *überhaupt* and Russian *voobšče* are also NPIs, and suggest that this could indicate a connection between NPIhood and presupposition denial. It turns out that *überhaupt* and *voobšče* (and *daže*) are in fact perfectly acceptable in contexts that do not license NPIs; this suggests that the declarative puzzle that are concerned with cannot be reduced to a simple ban on the *even*-like items involved appearing in positive environments.
unlikely or noteworthy discourse moves. In cooperative discourse, speakers should not presuppose what is not common ground; if the conversation is unfolding as it should, presupposition-denying discourse moves are thus very unlikely or noteworthy moves to make. *Even* could be making this fact salient, pointing out that something has gone amiss in the conversation.

It should be noted that on the proposal made in Section 2.3 the scalar presupposition of *even* is trivially satisfied in declarative presupposition denials under negations because the prejacent entails the other alternatives. This means that the scalar presupposition of *even* will be satisfied in any context that makes salient the set of alternatives that we have been assuming, and so it should not contribute any additional information about the likelihood or noteworthiness of the discourse move being made. More importantly, having *even* operate solely at the level of discourse moves would fail to derive the polarity-based asymmetry that we have been assuming. However, since it was the additive presupposition of *even* that was crucial in deriving the polarity-based asymmetry, it is in principle possible that the scalar presupposition of *even* operates at the level of discourse moves, while the additive presupposition of *even* operates at the level of propositional content. A story along these lines would suggest a connection with Grosz’s (2011b, 2014) view of *only* and its kin as communicative cues in optative constructions. Perhaps the scalar component of *even* serves to draw attention to the A operator action going on at the level of truth conditions. Or perhaps it could have expressive effects, taking on the role of signalling that the speaker’s frustration or confusion with their interlocutor has reached a noteworthy level.  A story along either of these lines would be intriguing, and worth pursuing further, but I will not do so here. Instead, I will turn in the next section to what options are left to us if we do not assume a discourse-level role for any part of *even*'s meaning.

2.5.2 Making a fuss

If *even* does not, by virtue of its scalar presupposition, mark presupposition denials as unlikely or noteworthy responses to presupposition-triggering discourse moves, why does it feel so natural in presupposition denials? This question is a tricky one; let us break it

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21 This would be one way of capturing the aggressive flavour of *even*-denials.
Firstly, we might ask why it feels so natural to embellish a perfectly good presupposition denial like (32) with additional material, as in (33).

(32) A: Did Kenji’s wife go to the picnic?
    B: Kenji isn’t married!
(33) A: Did Kenji’s wife go to the picnic?
    B: Kenji isn’t even married!

Note that this question could just as well be asked about the embellished presupposition denials in (34).

(34) A: Did Kenji’s wife go to the picnic?
    B: What are you talking about? Kenji isn’t married!
    B’: Kenji’s wife didn’t go to the picnic – Kenji isn’t (even) married!
    B”: Actually, Kenji isn’t married!

Presupposition denials only occur when i) another speaker has presupposed something that is not common ground, and furthermore ii) that presupposition cannot be accommodated (i.e., because the speaker of the presupposition denial believes the presupposition to be false). Under these circumstances, it is necessary for a cooperative speaker to speak up; a conversational crisis (see e.g. Farkas & Bruce 2009) is at hand, one which cannot be fixed without revising the common ground. While the most simple way to speak up is to utter something like (32), this kind of discourse move is so important that it is quite sensible for speakers to want to make sure that it does not slip by unnoticed. When seen in this light, adding material that will make the presupposition denial more noticeable is a perfectly natural course of action for a cooperative speaker.

Now we can ask why, if one is going to add something to a presupposition denial, a focus-sensitive operator is a good candidate. The answer is that focus-sensitive operators

\footnote{Possible exception: If the presupposition is truly orthogonal to the continued viability of using conversation to achieve the conversational goals.}
make salient certain alternatives to what was said. In the case of the denial of the presup-
position that Kenji has a wife (35), the non-prejacent alternatives have the same structure
that we have assumed for instances of metalinguistic negation like the first clause of (36).
That is, the (non-prejacent) alternatives that *even* makes salient just so happen to be the
metalinguistic negations of the congruent discourse moves. Because the prejacent of *even*
entails its alternatives, the additive and scalar presuppositions both ensure that (at least one
of) the alternatives are true. This gives *even* denials a structure parallel to presupposition
denials like (36), with the difference being that in the latter the metalinguistic negation
piece is asserted whereas in the former it is presupposed.

(35) Kenji isn’t even married!

a. LF: $\text{even}_e [\text{NEG } [\text{Neg} [\text{Neg} [\text{Kenji is married}]]]]$

b. $\text{C} = \{\text{NEG } [\text{Neg} [\text{Kenji’s wife came to the picnic}]],$

   $\text{NEG } [\text{Neg} [\text{Kenji’s wife didn’t come to the picnic}]]\}$

(36) The king of France isn’t bald... there is no king of France!

a. $\text{NEG } [\text{Neg} [\text{the king of France is bald}]] ... \text{NEG } (\text{A}) \text{ [there is a king of France]}$

As for why so many languages choose to use an item with a scalar (and possibly additive)
component, as opposed to some operator, this is simply an environment where an item with
a scalar presupposition that i) places the prejacent on the noteworthy end of a scale and ii)
is compatible with entailment- and/or likelihood-based scales will have its presupposition
satisfied. If this is so, we should predict that if there was an item that was the mirror
image of *bixlal* – that is, an item that has just the additive component of *even* without
a corresponding scalar component, it would be an appropriate addition to presupposition
denials. I have been unable to find such an item.\(^{23}\) One might imagine that *also* would be a
good candidate, but as we will see in Chapter 3 the additive component of *also* differs from
that of *even* in being incompatible with alternatives that are in an entailment relation with
the prejacent. Other operators, like *only*, induce a scale of sorts but place their prejacent

\(^{23}\)Note that, if a language had such an item, and separately had a scalar additive item, they might compete
according to Heim’s (1991) Maximize Presupposition.
on the wrong end of it. Scalar (additive) operators appear to be the only kind of focus-sensitive operator whose meanings are compatible with the alternatives made salient in presupposition-challenging discourses.

We have answered the question of why scalar (additive) focus-sensitive items make sense as tools for adorning presupposition denials: through the combination of their presuppositions and their assertion, they convey roughly the same thing as *Kenji’s wife didn’t come to the picnic... Kenji isn’t married!*. But does this account for the feeling that presupposition denials with *even* are more aggressive than plain presupposition denials like *Kenji isn’t married*? Perhaps. But what of the intuition that what *even* conveys is that not even the precondition for the other speaker’s discourse move to be felicitous holds? Can this intuition be accounted for? I believe so. This feeling appears to be a byproduct of *even* taking an entailment-based scale, where the prejacent of *even* is the negation of the low endpoint of the scale. The following example shows that the same feeling can be produced without any denial of a (lexically triggered) presupposition.

(37) Context: *Students who solve at least ten homework problems receive a prize.*

A: Did Kenji solve (at least) ten problems?
B: He didn’t even solve [one]!

Solving at least one problem is a precondition for solving at least ten, just as having a wife is a precondition for having a wife who attended a picnic.

### 2.6 Technical notes

This section examines roads not taken in the analysis above and explores technical consequences of the choices that were made.

#### 2.6.1 Size of focus associate

In Section 2.3, I assumed without argumentation that *even* focuses a proposition-sized constituent in the sentences we are considering. Let us now check what would have happened
if we had instead assumed that *even* associates just with the VP, not including the lower copy of the subject.

When the focus-associate is restricted to the VP, what are relevant substitutions? As a first pass, suppose that *unmarried* is a salient substitution for *married*, and vice versa.

(38) Kenji isn’t even married!
   a. LF = evenC [NEG [Kenji is [married]F]]
   b. C = \[
      \begin{cases}
      \text{[NEG [Kenji is married]]}, \\
      \text{[NEG [Kenji is unmarried]]}
      \end{cases}
   \]
   \[
   = \begin{cases}
      \text{Kenji isn’t married}, \\
      \text{Kenji isn’t unmarried}
   \end{cases}
   \]

(39) #Kenji’s even unmarried!
   a. LF = evenC [Kenji is [unmarried]F]
   b. C = \[
      \begin{cases}
      \text{[Kenji is unmarried]}, \\
      \text{[Kenji is married]}
      \end{cases}
   \]
   \[
   = \begin{cases}
      \text{Kenji’s unmarried}, \\
      \text{Kenji’s married}
   \end{cases}
   \]

The scalar presupposition of *even* in each case is in principle satisfiable; (38) requires that it is less likely that Kenji is not married than that he is not unmarried, which is equivalent to requiring that it is more likely for Kenji to be married than unmarried. (39) likewise requires that it is less likely for Kenji to be unmarried than to be married – that is, that it is more likely for Kenji to be married than to be unmarried. However, the additive presupposition cannot be satisfied in either case, because the alternatives that *even* encounters are mutually exclusive.

Let us now suppose that there are other relevant substitutions for *married/unmarried* in the contexts we are considering. For example, suppose that we added *dating* into the mix. In the negative case, this would yield the set of alternatives in (40-b).

(40) Kenji isn’t even married!
Here, the scalar presupposition is in principle satisfiable, just in case not being married is less likely than not dating (and not being unmarried, i.e., being married). This is compatible with a scenario where, say, most people are either married or single. The additive presupposition is also satisfiable, just in case Kenji is currently single. In the positive case, however, the situation is different.

(41) #Kenji’s even unmarried!

As in the negative case, the additive presupposition is satisfiable, but it is not satisfiable in the same context as the negative case; the additive presupposition here requires that Kenji is dating. If we take dating to be incompatible with marriage, dating would entail unmarried status, and so the third alternative would entail the prejacent, leading to a failure of even’s scalar presupposition. If we do not take dating to be incompatible with marriage, the scalar presupposition will be in principle satisfiable, but as with the additive presupposition not in the same context required for the negative case; here, the scalar presupposition would require that it is less likely to be unmarried than to be either dating or married. Thus,
we can derive a contrast between positive and negative presupposition denials with *even* without appealing to presuppositions triggered within alternatives or A operators, but doing so comes at a cost: if we use predicate-sized substitutions like *dating*, we should expect the direction of the asymmetry to be context-dependent. This prediction does not appear to be satisfied; positive presupposition denials with *even* are always unacceptable, regardless of whether Kenji is dating or single.

### 2.6.2 Relevance and salient alternatives

Existing theories of focus agree that focus-sensitive operators only make reference to a subset of the focus alternatives that could in principle be generated from their prejacents. Various suggestions have been made regarding how to characterize this subset. For Rooth (1992), C was anaphoric to a question that was salient in the discourse; for Roberts (2012), C was relevant to a QUD, and for Beaver et al. (2017), C simply was a QUD. In analysis proposed in Section 2.3, I assumed that the salient alternatives that *even* made use of were those propositions formed by substituting the propositions made salient by previous discourse move for the focused constituent; these substitutions were identical to the immediate QUD. However, the set of alternatives that resulted from making these substitutions was crucially different from the QUD raised by Speaker A’s discourse move. All of the alternatives in C contained A operators; if there were A operators in the QUD, no presupposition would emerge in Speaker A’s discourse move.

Although it was crucial that C was not identical to the question made salient by Speaker A’s discourse move, C was not unrelated to that question. To see why this is so, let us consider the partitions that can be derived from the sets of propositions denoted by questions (see, e.g., Groenendijk & Stokhof 1984, Hamblin 1958). Each proposition in the denotation of a question can be thought of as dividing the common ground into worlds where that proposition is true and worlds where that proposition is false. A relevant answer to a question is one that picks out a cell in the partition, and does not make distinctions among worlds that are cell-mates; in other words, relevant answers do not cut more finely than the question.
The presupposition-denying answers that we have been considering are not congruent discourse moves, but they also do not cut more finely than the question under discussion. Speaker A’s polar question in the dialogue about Kenji’s wife and the picnic is represented in (42), where \( \pi \) stands for the presupposition that Kenji has a wife and \( p \) and \( \neg p \) stand for the propositions that Kenji’s wife came to the picnic and that Kenji’s wife did not come to the picnic, respectively.

(42) Speaker A’s discourse move

\[ \text{Did Kenji’s wife go to the picnic?} \]

The large rectangular area in (42) that is bordered by a solid line is the set of worlds that Speaker A takes to be the context set; in all of the worlds in this set, Kenji has a wife (i.e., the presupposition \( \pi \) is true). Speaker A’s question divides these worlds into two cells, one containing all and only the worlds where Kenji’s wife went to the picnic \( (p_\pi) \), and the other containing all and only the worlds where Kenji’s wife did not go to the picnic \( (\neg p_\pi) \), and asks Speaker B to indicate which of these cells contains the actual world.

Speaker B’s response is not a congruent answer Speaker A’s question; it does not pick out either of the cells proffered by Speaker A. Indeed, Speaker B’s assertion – that is, the prejacent of \textit{even} – picks out precisely the set of worlds that Speaker A has taken to be excluded from the context set – that is, the worlds where Kenji does not have a wife.\(^{24}\)

\(^{24}\)The proposition that Speaker B asserts would therefore be a perfectly congruent answer to a question like \textit{Is Kenji married?}, illustrated in (i).

(i) A question congruently answered by Speaker B’s assertion

\[ \text{Is Kenji married?} \]
(43) Speaker B’s discourse move (assertion)

\[ \neg [A \{Kenji is married\}] \]

\[
\begin{array}{c}
\neg \pi & \pi \\
\hline
-p_\pi & p_\pi
\end{array}
\]

Yet it is not the case that Speaker B’s discourse move ignores Speaker A’s question. The presuppositions generated by Speaker B’s discourse move make use of the division among \( p_\pi \) and \( \neg p_\pi \) worlds that Speaker A’s question introduced.

(44) Speaker B’s discourse move (presuppositions)

\[ \neg [A \{Kenji’s wife came\}] \]

\[
\begin{array}{c}
\neg \pi & \pi \\
\hline
\neg p_\pi & p_\pi
\end{array}
\]

\[ \neg [A \{Kenji’s wife didn’t come\}] \]

\[
\begin{array}{c}
\neg \pi & \pi \\
\hline
\neg p_\pi & p_\pi
\end{array}
\]

Taken together, neither the prejacent nor the non-prejacent alternatives of even cross-cut the cells in the partition introduced by Speaker A’s question. Although the \textit{even}-denial
does not directly answer Speaker A’s question (*Did Kenji’s wife go to the picnic?*), the set of alternatives that *even* makes use of correspond to a related question: *Does Kenji have a wife, and if so did she go to the picnic?*.

(45) Question addressed by Speaker B’s entire discourse move

\[ \neg \pi \qquad \pi \]
\[ p_\pi \]
\[ \neg p_\pi \]

That presupposition denials do not directly address the current QUD is a consequence of the fact that they object to a previous speaker’s discourse move. However, the structure of the presupposition denials that we have been considering ensures that they (and the alternatives that *even* makes reference to) are nevertheless relevant to the discourse move that they object to.

2.6.3 A note on the A operator

In the analysis presented above, the non-prejacent alternatives that *even* encounters contain two presupposition triggers in the scope of an A operator.

(46) Kenji isn’t even married! repeated from (17)

a. LF: \[ \text{even}_{\text{C}} \text{ [NEG [A [Kenji is married]]]} \]
\[ \text{NEG [A [Kenji is married]],} \]

b. \[ C = \{ \text{NEG [A [Kenji’s wife came to the picnic]],} \]
\[ \text{NEG [A [Kenji’s wife didn’t come to the picnic]]} \]
\[ \text{It’s not true that Kenji is married,} \]
\[ \text{It’s not true that Kenji has a wife and she came to the picnic,} \]
\[ \text{It’s not true that Kenji has a wife and she didn’t come to the picnic} \]
The analysis presented above was silent on what happens to the presupposition triggered by \textit{the picnic}. The meaning that we have been assuming for the A operator is unselective; in the non-prejacent alternatives, the A operator under negation should therefore end up asserting not only the presupposition that Kenji has a wife but also the presupposition that there is a unique picnic.

While having the A operator accommodate both of these presuppositions would not change the fact that the prejacent of \textit{even} denies the presupposition that Kenji has a wife, it would prevent the presupposition that there is a picnic from projecting.\textsuperscript{25} It is difficult to construct examples where presupposition denials with \textit{even} are embedded, and so it is difficult to test whether this is a desirable prediction. However, Romoli (2011) has argued on independent grounds that A operators need to be able to selectively accommodate some presuppositions in their scope while leaving others untouched. If it turns out that the presupposition of \textit{the picnic} does project out of our presupposition denial \textit{Kenji isn’t even married}, the analysis presented above would need to be amended so that it includes a selective A operator targeting only the presupposition that ends up being denied by \textit{even’s} prejacent.

What properties should a selective A operator have? We need a lexical entry for A that, when applied to an argument like \textit{Kenji’s wife went to the picnic}, would be able to target the presupposition triggered by the possessive \textit{Kenji’s wife} while leaving the presupposition triggered by the definite description \textit{the picnic} untouched. That is, in cases where \textit{Kenji’s wife went to the picnic} would receive the third truth value due to a failure of the presupposition that Kenji has a wife, this A operator should map \textit{Kenji’s wife went to the picnic} to false, but in cases where \textit{Kenji’s wife went to the picnic} would receive the third truth value due to a failure of the presupposition that there is a picnic, this A operator should map \textit{Kenji’s wife went to the picnic} to the third truth value.

One way of implementing the idea of a selective A operator, suggested by Fox (2013: 25)
fn. 35), is to coindex the A operator with the trigger(s) of the presupposition(s) it accommodates. Fox proposes that the selective A operator detects cases where its prejacent (φ) receives the third truth value due to the failure of the presupposition of a particular trigger \( t_i \) by comparing its prejacent φ to the structure \( \phi_i \) (the bivalent correction of φ relative to \( t_i \)) that would result from replacing \( t_i \) with a non-presuppositional counterpart. In the cases where φ receives the third truth value but \( \phi_i \) does not – that is, where replacing the co-indexed trigger with a non-presuppositional counterpart makes a difference – this A operator will change φ’s truth value. A lexical entry for an index-sensitive A operator that does this is given in (47).

(47) Lexical entry for index-sensitive A operator

\[
[A_i(\phi)] = \begin{cases} 
1 & \text{if } [[\phi]](w) = 1 \\
0 & \text{if } [[\phi]](w) = 0 \text{ or } [[\phi]](w) = \# \text{ and there is a bivalent correction of } \phi \text{ relative to } t_i, \phi_i, \text{ such that } [[\phi_i]](w) \text{ is bivalent} \\
\# & \text{otherwise}
\end{cases}
\]

To see how this lexical entry achieves the desired effect, consider a propositional constituent φ that dominates two presupposition triggers, \( t_i \) and \( t_j \) – for example, (48).

(48) [Kenji’s wife went to the picnic]

What is a bivalent correction of this φ relative to the trigger \( t_j \) (the)? It will be a structure that results from replacing the with an expression that i) is of the same semantic type as the, ii) is not presuppositional (i.e., never causes structures that contain it to receive the third truth value), and iii) results in the same truth value as the whenever the yields a bivalent truth value. Appropriate non-presuppositional counterparts of the include a and every; replacing the with these expressions yields the bivalent corrections of φ relative to \( t_j \) in

\(^{26}\)Danny Fox (p.c.) suggests that we define \( t' \), a non-presuppositional counterpart (bivalent correction) of a presupposition trigger \( t \), as an expression that i) has the same semantic type as \( t \), ii) is not a presupposition trigger (i.e., is never responsible for structures containing it receiving the third truth value), and iii) results in the same truth value as \( t \) whenever \( t \) yields a bivalent truth value.
These structures differ from $\phi$ only in whether a presupposition that there is a picnic is triggered. Crucially, in any world where $\phi$ receives a bivalent truth value, the $\phi$'s in (49) will share this bivalent truth value. Thus, the bivalent corrections differ from $\phi$ only in cases where $\phi$ would receive the third truth value due to the failure of the presupposition of the.

To make this concrete, let us now turn to truth table talk. In the following table, $\phi$ represents Kenji's wife went to the picnic. The presuppositions that Kenji has a wife (triggered by the possessive, $t_i$) and that there is a unique picnic (triggered by the definite description, $t_j$) are represented by $\pi_i$ and $\pi_j$, respectively. $\phi_i$ is a bivalent correction of $\phi$ relative to $t_j$ - for example, Kenji's wife went to a picnic - while $\phi_i$ is a bivalent correction of $\phi$ relative to $t_i$. The latter would be true in the same worlds as Kenji has a wife and she went to the picnic. For completeness, $\phi_{i,j}$ is a bivalent correction of $\phi$ relative to both $t_i$ and $t_j$ (cf. Kenji has a wife and she went to a picnic).

(50) Truth table for index-sensitive $A$ operator acting on a $\phi$ with triggers $t_i$ and $t_j$

<table>
<thead>
<tr>
<th>$\pi_i$</th>
<th>$\pi_j$</th>
<th>$\phi$</th>
<th>$\phi_i$</th>
<th>$\phi_j$</th>
<th>$\phi_{i,j}$</th>
<th>$A_i(\phi)$</th>
<th>$A_j(\phi)$</th>
<th>$A_{i,j}(\phi)$</th>
</tr>
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<tbody>
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</tr>
</tbody>
</table>

27That is, whenever Kenji's wife went to the picnic is defined and true, Kenji's wife went to a picnic and Kenji's wife went to every picnic are also true as well. Likewise, whenever Kenji's wife went to the picnic is defined and false, Kenji's wife went to a picnic and Kenji's wife went to every picnic are also false.

51
The selective A operator compares the truth values for φ and its bivalent correction relative to the coindexed trigger(s). In rows in the truth table where φ receives the third truth value but its bivalent correction with respect to the coindexed trigger(s) does not, the A operator maps φ to false; in all other rows, applying the A operator to φ leaves φ’s truth value unchanged. Thus, an A operator coindexed with the trigger \( t_j \) will map φ to false when φ receives the third truth value but \( \phi_{t_j} \), the bivalent correction of φ relative to \( t_j \), does not. Likewise, an A operator coindexed with the trigger \( t_i \) will map φ to false when φ receives the third truth value but \( \phi_{t_i} \), the bivalent correction of φ relative to \( t_i \), does not. An A operator coindexed with both triggers \( t_i \) and \( t_j \) will map φ to the false when \( \phi \) receives the third truth value but \( \phi_{t_i,j} \) does not. When φ receives a truth value of 1 or 0, \( A_j(\phi) \), \( A_i(\phi) \), and \( A_{i,j}(\phi) \) all share φ’s truth value.

This A operator will achieve the desired effect of targeting some presuppositions in its scope but not others. By comparing φ to its bivalent corrections relative to various triggers, the index-sensitive A operator is able to isolate and defuse the presuppositions of those triggers. If this A operator is coindexed with both presuppositions, the result will be the same as applying a non-selective A operator: all worlds where φ receives the third truth value will be mapped to false.

### 2.6.4 Scope vs. ambiguity theory of even

The proposal laid out above was formulated in the scope theory of even. Could we have achieved the same empirical coverage with the ambiguity theory of even?

The lexical ambiguity and scope theories of even differ only in their treatment of even in NPI-licensing environments; this means that we can import the account of the unacceptability of positive presupposition denials with even directly into a lexical ambiguity account. Positive presupposition denials with even will have the LF and set of alternatives in (51), repeated from (18); because none of the alternatives can be true when the prejacent is true, the additive presupposition of even is not satisfied.
He’s even unmarried!

a. LF: even$_c$ [A [he is unmarried]$_F$]

\[\text{A [he is unmarried]},\]

b. \(C = \{\text{A [his wife came to the picnic]},\)
\[\text{A [his wife didn’t come to the picnic]}\]
\[\text{He is unmarried},\]
\[\text{He has a wife and she came to the picnic},\]
\[\text{He has a wife and she didn’t come to the picnic}\]

All that is left is to derive the acceptability of negative presupposition denials with even.

Recall that, in the ambiguity theory, even$_{NPI}$ scopes below negation in negative sentences; this means that our flagship negative example will have the LF in (52-a) and the set of alternatives in (52-b).

He isn’t even married!

a. LF: \(\text{NEG [even}_{NPI} [A [he is married]_F]]\)

\[\text{A [he is married]},\]

b. \(C = \{\text{A [his wife came to the picnic]},\)
\[\text{A [his wife didn’t come to the picnic]}\]
\[\text{He is married},\]
\[\text{He has a wife and she came to the picnic},\]
\[\text{He has a wife and she didn’t come to the picnic}\]

Aside from the prejacent, the set of alternatives in (52-b) is identical to the one generated for the positive sentence in (51-b). However, the presuppositions of even$_{NPI}$ are the reverse of the presuppositions of the non-NPI-even found in positive sentences. Crucially, the additive presupposition of even$_{NPI}$ requires that there is a non-prejacent alternative that is false, whereas non-NPI-even requires that there is a non-prejacent alternative that is true. As we have already seen, all of the non-prejacent alternatives in this set are false; this will result in a failure of the additive presupposition of non-NPI-even in the positive sentences, but the additive presupposition of even$_{NPI}$ will be satisfied. The scalar presupposition will
also be trivially satisfied, because $even_{np}$ presupposes that its prejacent is the most likely of the alternatives, and the prejacent here is entailed by each of the non-prejacent alternatives. Thus, it is possible to derive the observed asymmetry under a lexical ambiguity theory of $even$.

### 2.7 Loose ends and further extensions

In this section, I would like to lay out two loose ends and some possibilities for extending the proposal to other kinds of objections to discourse moves.

#### 2.7.1 The positions of $even$ and negation

The proposal made in Section 2.3 successfully derives the contrast between positive and negative presupposition denials with $even$ in (53), repeated from (2).

(53)  
A: Did Kenji’s wife come to the picnic?  
B: Kenji isn’t $even$ married!  
B’: #Kenji’s $even$ unmarried/a bachelor!

Nothing in the proposal relied on the surface position of $even$ with respect to negation; in light of this, the contrast in (54) is surprising.

(54)  
A : Did Kenji’s wife come to the picnic?  
B : Kenji isn’t $even$ married!  
B’: #Kenji $even$ isn’t married!

On the scope theory of $even$ that we have been assuming, we might expect (55) to be a possible LF for both (54-B) and (54-B’).

(55)  
LF: $\left[even_{c}\ \left[\neg\ \left[he\ \text{is\ married}_{f}\right]\right]\right]$

Why does the surface position of $even$ matter in this way?
One immediately appealing possibility is that *even* simply cannot occupy the position that it occupies in (54). Indeed, native speakers of English appear to quite generally disprefer spelling out sentential *even* above negation when it could have been spelled out below negation instead. For example, the following minimal pair does not involve presupposition denial yet shows what appears to be the same contrast as (54).

(56) **Context:** *The Canadian government has introduced several new tax breaks for various special interest groups. There is a tax break for students, a tax break for people who speak both of Canada’s official languages, and a tax break for people who are married. Two of Kenji’s friends are training to be accountants, and they have been practicing their skills by filling out Kenji’s tax forms for him. One friend mistakenly fills out the forms so that Kenji claims all three of the new tax breaks. The other friend objects:*

a. Kenji isn’t a student, he isn’t bilingual; he isn’t *even* MARRIED!

b. Kenji isn’t a student, he isn’t bilingual; *he even* isn’t MARRIED!

Indeed, this preference for a low spellout position appears to hold for other embedding operators, such as modals; this is demonstrated in (57).

(57) **A:** I hear that your department has introduced mandatory electives for each specialization. What courses do students have to take?

**B:** Some must take acoustics. Some must take psychology. Some must *even* take PHILOSOPHY!

**B’:** Some must take acoustics. Some must take psychology. #Some *even* must take PHILOSOPHY!

However, there are contexts where speakers accept sentences where *even* is spelled out above an embedding operator. This is shown in (58), where *even* is acceptable in a position above the modal; since modals appear above negation in the surface string, this means that *even* can in principle be spelled out above negation.28

28Native speakers do not seem to judge strings like *Kenji even isn’t married* to be acceptable, regardless
A: What is the role of philosophy in your department’s curriculum for linguistics students?

B: #Some may take philosophy. Some should take philosophy. Some **MUST even** take philosophy.

B’: Some may take philosophy. Some should take philosophy. Some **even MUST** take philosophy.

Note that this example differs from the preceding examples in the relative scopes of *even* and its focus associate. *Even* is only able to focus-associate with material that originated in its scope (Jackendoff 1972, Erlewine 2014a(a),b). If *even* can only focus-associate with material that is merged below it, this means that *even* has different focus association possibilities when it appears above and below negation, as schematized in (59).

(59) Maximal focus association possibilities

a. (i) SS: He isn’t even married!
(ii) LF: even\(_C\) [NEG A [\([\text{he is married}]_F\)]]

b. (i) SS: He even isn’t married!
(ii) LF: even\(_C\) [NEG [A [he is married]]]_F

These different focus association possibilities in turn allow for different sets of focus alternatives. More particularly, the alternatives for (59-a) will all necessarily contain negation and the A operator, while this will not necessarily be so for (59-b). Recall that what prevented the negative presupposition denials with *even* from suffering the same fate as the positive ones in the core proposal was the fact that all of the alternatives contained the presupposition-denying [NEG A] combination. This combination is guaranteed to be present in (59-a), but not in (59-b), because in the latter case the negation and A operator are included in the focus associate and thus eligible to undergo substitution. If we were to further suppose that *even* cannot occupy this higher position unless it is going to exploit its

56
increased focus association possibilities, we would have an explanation for the asymmetry. On this view, the problem is not that a parse with an A operator under negation is not accessible in (54); the problem is that selecting such a parse when these operators are part of the focus does not guarantee that all of the alternatives will contain these operators.

This pattern is reminiscent of a constraint proposed by Erlewine (2017) for Vietnamese focus-sensitive operators, namely (60).

\[(60) \textbf{Generalization about sentential focus operators} \quad \text{(Erlewine 2017: 334)}
\]

Sentential focus particles (focus-sensitive sentential modifiers) must be as low as possible while c-commanding their focus associate, within a given phase.

Erlewine argues that this constraint is blind to the intended meaning; he shows that the availability of a lower spellout position for a focus-sensitive operator blocks a higher spellout position, even when the higher spellout position yields a reading that is otherwise unavailable. This principle is clearly not quite right for English; as the acceptability of both sentences in (61) shows, only can be spelled out either above or below negation, depending on the desired meaning.

\[(61) \begin{align*}
\text{a.} \quad & \text{Mary isn’t only required to learn } [\text{Spanish}]_F. \\
\text{b.} \quad & \text{Mary only isn’t required to learn } [\text{Spanish}]_F.
\end{align*} \]

It appears that the constraint governing the placement of English focus-sensitive operators is instead something along the lines of (62):

\[(62) \textbf{Go low}
\]

Spell out sentential focus-sensitive operators in the lowest position that will yield the intended meaning.

Note that this condition only compares the sentential operator positions; it does not compare positions for constituent only and even. That is, the availability of the DP-adjacent position in (63-a) does not block the availability of the vP-adjacent position in (63-b) but the vP-adjacent position does block the NegP-adjacent position in (63-c).
The difference between *even* and *only* is that, whereas both positions in (63-b) and (63-c) yield the same meaning and so are competitors for one another, (64-b) and (64-c) do not, and so are not.

I believe that this is the correct analysis, but before closing this subsection I would like to raise and ultimately reject another possible analysis.

One might imagine that the contrast in (54) reflects a closer link between the *even* and the A operator than we have been assuming up to this point. There is precedent for an idea along these lines in the literature; for reasons independent of presupposition denial, Erlewine (2014b) builds an A operator into the scalar presupposition of *even*. More particularly, he proposes that the scalar presupposition of *even* does not rank *even*’s alternatives directly but rather ranks the propositions resulting from applying the A operator to *even*’s alternatives. Erlewine crucially assumes the ambiguity theory of *even*, which would mean that *even* – and the A operator in its scalar presupposition – would interpreted in different places in (54). Although Erlewine does not discuss the additive presupposition of *even*, a straightforward extension of his account to include an A operator in the calculation of *even*’s additive presupposition would allow us to capture the contrast in (54). When *even* is spelled out below negation, as in (54), both *even* and the A operator will be interpreted under negation. The latter will yield the presupposition-negating configuration we require. When *even* is spelled out above negation as in (54), the A operator will be interpreted above negation. Just as in the positive presupposition denials, in the absence of a (second) higher negation, this will result in an unsatisfied presupposition being asserted in the non-prejacent alternatives, making them false and thus unable to satisfy *even*’s additive presupposition.
(65)  He isn’t even married!
    a. LF: NEG [even_{NPI+}A [Kenji is married]_f]

(66)  #He even isn’t married!
    a. LF: even_{+}A [NEG [Kenji is married]_f]

On this view, the position of interpretation for the A operator would track the surface position of `even`. The two sentences in (54) would thus crucially differ in whether the A operator is interpreted above or below negation. As we have seen, having an A operator under negation is necessary to ensure the definedness of the non-prejacent alternatives so that they can satisfy `even`’s additive presupposition; on this view, we would therefore predict only the lower spellout of `even` to be acceptable.

The analysis just sketched would require significant auxiliary assumptions in order to work. Firstly, having `even` and an A operator packaged together is not on its own enough to ensure the unacceptability of (54); we would need to strengthen this assumption by ruling out introducing A operators another way. Yet it does not seem desirable to say that the only way A operators can be introduced is as part of the meaning of `even`; there are cases of presupposition denial under negation, like the King of France example, that do not contain `even`.\footnote{Of course, one could deny that there is an A operator in the King of France denials, and instead take metalinguistic negation to be the relevant mechanism for presupposition denial in these cases. This view would require us to admit two mechanisms for presupposition denial into the grammar. Alternatively, we could assume that the King of France denial contains a covert `even`.} This story would also fail to capture data beyond English: although English `even` (and Greek `kan`) cannot be spelled out above negation in presupposition denials, Russian `daže` and German `überhaupt` can. This is shown in (67) and (68), repeated from (19) and (21), respectively.

(67)  A:  A žena Kenji pri hodila na piknik?
       PART wife Kenji GEN came to picnic
       ‘Did Kenji’s wife come to the picnic?’

       B:  ?Da on daže ne ženat.
       DA he DAŽE NEG married
       ‘He isn’t even married!’

29
If we were to attempt to tie the position of the A operator with the surface position of scalar additive items in the general case, we would wrongly predict the presupposition denials in (67) and (68) to be infelicitous. To capture the German and Russian data, we must allow A operators to be inserted independent of the surface position of any scalar additive operators in the structure.30 Once we allow this mechanism into the grammar for German and Russian, I see no reason to not do so for English as well.

2.7.2 Which even?

German, Greek, Russian, and Hebrew all have several even-like items. Of these languages, only Russian reliably31 allows more than one of its even-like items to appear in presupposition denials. Why might this be?

Given the discussion above, we should expect even-like items to be unacceptable even in negative presupposition denials for at least the following two reasons. Firstly, we have seen that the alternatives in negative presupposition denials are in an entailment relation. If an even-like item had a scalar presupposition that was restricted to non-entailment-based scales, we would expect it to be unacceptable in presupposition denials. Secondly, as we will see in Chapter 3, it is possible for a scalar additive item to have a stronger additive component than the one we have been assuming for even, daže, überhaupt, and kan; these stronger additive components can only be satisfied by alternatives that are not in an entailment relation with the prejacent. As the alternatives in negative presupposition denials are in an entailment relation, we should expect that any item with a strong additive component

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30 There is an alternative: we could assume that daže and überhaupt are both inserted under negation and then undergo obligatory overt movement to their observed positions above negation. I do not know what would motivate such a movement.

31 For some German speakers, there is more than one even-like item that can appear in presupposition denials. More on this shortly.
of this kind will be unacceptable in presupposition denials.

Greek has two even-like items that can appear in negative sentences: oute and kan. Only the latter can appear in presupposition denials. Oute is both scalar (in the correct direction) and additive (Giannakidou 2007); as we have already seen, kan appears to share both of these meaning components. Neither item has a strong additive component of the kind described above, nor do their scalar components appear to be allergic to entailment-based scales; both are compatible with alternatives that are in an entailment relation. However, oute and kan differ in a surprising way: when the prejacent rejects the current QUD, only kan can be used. This is illustrated in (69); the alternative question asked by Speaker A presupposes presupposes that Mary was born in Canada, and Speaker B’s response answers the more basic question (Was Mary born in Canada?) whose positive answer Speaker A has presupposed.32

(69) A: Ītan i María genniméni sto Vankóúver i sto Torónto?
    was the Mary born in the Vancouver or in the Toronto
    ‘Was Mary born in Vancouver or in Toronto?’

    B: Den genníthike kan ston [Kanadá]!
       NEG born KAN to Canada
       ‘She wasn’t even born in Canada!’

    B’: #Den genníthike oute ston [Kanadá]!
       NEG born OUTE to Canada

In a similar vein, Hebrew has a garden-variety even item, afilu, in addition to bixal which cannot appear in presupposition denials. Afilu has an additive component like English even and is compatible with entailment-based scales, and so it is unsurprising that it is incompatible with positive presupposition denials; what is puzzling is that afilu is also incompatible with negative presupposition denials. Like kan and oute, bixal and afilu differ in how they interact with the QUD. More particularly, the prejacent of bixal cannot answer the QUD, whereas the prejacent of afilu can. For example, the native speakers that I have consulted report that the use of bixal in the following dialogue is not acceptable if Speaker A is interested in finding out where Ruty lives; it is only acceptable if Speaker A

32 Sabine Iatridou (p.c.) reports an intuition that oute and kan may have different focus association possibilities. This is another possible point of variation among focus-sensitive item, and one which deserves more attention than I will give it here.
is looking for a Belgian citizen.

(70) A: Ruti hi belgit?
    Ruty she Belgian
    ‘Is Ruty Belgian?’

    B: Lo, he bixal [carfatiya]F
    no she BIXLAL French
    ‘No, she is actually French.’ (Greenberg & Khrizman 2012: 141)

I would like to suggest that *oute* and *afilu* differ from *kan* and *bixal* in the following way: *oute* and *afilu* presuppose that their preajcents address the current QUD, while the latter pair do not. On this view, the unacceptability of *afilu* and *oute* in presupposition denials amounts to a presupposition failure.33

The situation is somewhat different in German, another language with multiple *even*-like items. Some speakers allow only *überhaupt* to appear in presupposition denials; others allow *sogar* instead. *Sogar* is a scalar item that lacks an additive component (Schwarz 2005). Those speakers who accept *sogar* in presupposition denials accept it in both positive and negative presupposition denials, as we should predict. The speakers who do not accept *sogar* in presupposition denials report an intuition that presupposition-denying contexts do not make accessible the right kind of scale for *sogar*. If there are speakers for whom *sogar* is incompatible with entailment-based scales, this would explain why these speakers only allow *überhaupt* in presupposition denials.

In contrast to German, Greek, and Hebrew, Russian has several *even*-like items that speakers agree can be used in presupposition denials. We have seen that the “garden-variety” scalar additive item, *daže*, can be used in presupposition denials, as can the *überhaupt*-like item *voobšče* (cf. footnote 11). Another *even*-like item that can appear in presupposition denials is *že*, which transparently forms part of *daže*. *Že* has been described as a verum operator (Hagstrom & McCoy 2002) and a contrastive operator (McCoy 2003),

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33 This could be related to the idea advocated for by Beaver et al. (2017) that focus-sensitive operators take a QUD as their domain (C). Perhaps this constraint is encoded as a presupposition on some focus-sensitive operators (*oute, aflu*) but not others (*even, bixal, überhaupt, daže*).
but its behaviour in questions suggests that it may have a scalar component (cf. Iatridou & Tatevosov 2016). Že is not additive, and so like bixdal it is compatible with both positive and negative presupposition denials.\footnote{I believe that Že differs from daže in other ways than additivity; otherwise, we might expect it to be unacceptable in negative presupposition denials due to a Maximize Presupposition effect.}

Thus, languages with multiple scalar (additive) items may use more than one of these items in presupposition denials; the choice will depend on the particular semantics of the items in question and the semantics of other even-like items in the lexicon.

### 2.7.3 Irreparable infelicity

The analysis that I have proposed makes a testable prediction. If it is a failure of the additive presupposition of even that makes positive presupposition denials with even unacceptable, we should therefore predict that if we could supply these sentences with a true alternative they would become acceptable.

Recall the three ways of being an eligible substitution for a focused constituent proposed by Fox & Katzir (2011): (i) being an element of the lexicon, (ii) being a subtree of the prejacent, or (iii) being a contextually salient constituent (of the same semantic type as the node it is substituted for). We exploited option (iii), arguing that what is substituted is a proposition made salient by the addressee’s discourse move. These propositions all contained the trigger for the presupposition denied by the prejacent. Although some of the propositions that were salient in the discourse contained negation, none of them contained an A operator (i.e., the A operator was not part of the substitution source); this made it impossible to produce the configuration \( \text{NEG} > \text{A} > \phi \) that makes it possible to negate presuppositions in any of the alternatives for the positive sentence with even. It is this configuration that ensures that, when a presupposition-bearing propositional alternative \( \psi \) is substituted for \( \phi \), its presupposition will be safely cancelled, yielding a true proposition that satisfies the additive presupposition of even. In negative sentences this configuration can be produced no matter what substitutions are made, because both the A operator and negation are outside of the focused constituent. This is shown schematically in (71)-(72).
He isn’t even married!

a. LF: evenc \( \text{NEG} \ [A \ [\text{he is married}]_{F}] \)
b. \( C = \{ p \mid p = [\text{NEG} \ [A \ [q]]] \} \)

#He’s even unmarried!

a. LF: evenc \( [A \ [\text{he is unmarried}]_{F}] \)
b. \( C = \{ p \mid p = [A \ [q]] \} \)

This allows us to make a prediction: If we could supply \( \text{even} \) with an alternative that contains \( A \) under negation, positive presupposition denials with \( \text{even} \) should become acceptable. The relevant examples are given in (73), where the familiar presupposition-denying \( \text{even} \) sentence is preceded by a negated sentence carrying the presupposition trigger – a sentence that can only be acceptable if it is parsed with an \( A \) operator under negation (cf. (15)). Because the string \( [\text{NEG} \ [A \ [\text{his wife came to the picnic}]]] \) has just been uttered, it will be salient and thus part of the substitution source from which we can build \( \text{even} \)'s alternatives. This makes it possible for there to be a true alternative, namely the final alternative in the sets in (74).

(73) A: Did Kenji’s wife come to the picnic?
B: #No/His wife didn’t come to the picnic – he’s even unmarried!
B': #Not only did his wife not come to the picnic – he’s even unmarried!

(74) #...He’s even unmarried!

a. LF: evenc \( [A \ [\text{he is unmarried}]_{F}] \)

\[
\begin{align*}
\text{A [he is unmarried],} \\
\text{A [his wife came to the picnic],} \\
\text{A [his wife didn’t come to the picnic],} \\
\text{A [NEG [A [his wife came to the picnic]]]}
\end{align*}
\]

b. \( C = \{ p \mid p = [A \ [q]] \} \)

64
Unfortunately for the proposal presented above, native speakers judge these responses to be just as unacceptable as the original positive examples. We can confirm that the source of the unacceptability is not some difficulty in accessing a presupposition-cancelling parse for the first clause (i.e., one that includes an A operator below negation) because there is a clear contrast between the responses in (73) and those in (75). If such a parse were unavailable the continuations with even would be false, yielding incongruity.

(75) A: Did Kenji’s wife come to the picnic?
    B: No/His wife didn’t come to the picnic – he isn’t even married!
    B’: Not only did his wife not come to the picnic – he isn’t even married!

I do not know why this is the case.

2.7.4 Even and objection

Negative sentences with even are well suited to objecting to a discourse move on the grounds that some precondition for utterability is not met. This section will attempt to get a better picture of the empirical landscape of denials with even: on what grounds can discourse participants use even to spice up an objection to another speaker’s discourse move, and what are the effects of doing so?

Objections to assertions

Even cannot be used in direct denials of assertions.

(76) A: Joanna left.
    B: #She didn’t even leave!
    B’: #She even stayed!
On the view presented here, this fact falls out for free from the machinery we have been assuming. If we treat these denials as closely to the presupposition denials as possible, they will have structures and sets of alternatives as in (77).

(77) #She didn’t even leave!
    a. even_c [NEG [she left]_f]
    b. C = \{NEG [she left],
                  NEG [she didn’t leave]\}

(78) #She even stayed!
    a. even_c [she stayed]_f
    b. C = \{[she stayed],
                  [she didn’t stay]\}

Here, the scalar presupposition is satisfiable just in case it is less likely that Joanna stayed (i.e., that she didn’t leave) than that she didn’t stay (i.e., that she left). However, the additive presupposition is unsatisfiable in both cases, because the alternatives in both cases are mutually exclusive.

Objections to entailments

Even can be used in denials of entailments, which can be used to indirectly object to what is asserted. These denials display a polarity-based asymmetry parallel to the one observed for denials of presuppositions.

(79) A: Did Dan ace the test?
    B: He didn’t even pass it!
    B’: #He even failed it!

In (79), it turns out that the similarity to our puzzle is only apparent. When talking about test scores, *ace*, *pass*, and *(not) fail* are scalar alternatives of each other, related by entailment. This logical relation encourages a parse where focus is restricted to the verb, as in (80)-
(80) He didn’t even pass it!
   a. LF: evenc [NEG [he [passed]F it]]
   b. C = \{NEG [he passed it], NEG [he aced it], NEG [he failed it]\}
      = \{He didn’t pass it, He didn’t ace it, He didn’t fail it\}

(81) #He even failed it!
   a. LF: evenc [he [failed]F it]
   b. C = \{he failed it, he passed it, he aced it\}
      = \{He failed it, He passed it, He aced it\}

In (80), one of the non-prejacent alternatives (namely, *He didn’t ace it*) is entailed by the prejacent, and so it will be true whenever the prejacent is true; this guarantees that the additive presupposition of *even* is satisfied. The scalar presupposition of *even* will be satisfied just in case it is less likely that Dan didn’t pass the test than that he didn’t fail it – that is, just in case it is less likely that he failed than that he passed;\(^{36}\) this is compatible with a scenario where Dan is known to be a reasonably competent student. In (81), the scalar presupposition will likewise be satisfiable just in case it is less likely that Dan failed the test than that he passed it. However, both of the non-prejacent alternatives in (81) are false when the prejacent is true, meaning that the additive presupposition cannot be satisfied. In this way, we can derive the asymmetry in this case without appealing to A operators or presuppositions in the alternatives.

It is worth noting that this account relies on the focus being restricted to the verb in these cases. If *even* focused a proposition-sized constituent, as argued above for the clear presupposition denials, we would instead expect the following alternatives to be available when these sentences are uttered in response to the polar question *Did Dan ace the test?:*

\(^{35}\)The alternatives formed by substituting *fail* for *pass* in (i), and *ace* for *fail* in (ii), are not crucial for the analysis.

\(^{36}\)Note that the prejacent will always be less likely than the other salient alternative *He didn’t ace it*, because not passing a test entails not acing it. Thus, the satisfaction of the scalar presupposition in this case depends only on the relative likelihood of Dan passing vs. failing the test.
In contrast to the first parse we considered, here *even* has access to a true alternative in the positive sentence, namely *He didn’t ace it*. This is entailed by the prejacent, and so the additive presupposition is predicted to be satisfied, yielding felicity.

Why then is this parse not selected for the positive sentence, when the parse with the smaller focus-associate yields infelicity? One possibility is that this reflects a more general pressure to keep focus marking minimal in the grammar, such as Schwarzschild’s (1999) AvoidF constraint. A second possibility is that the parse is not ruled out but the relevant alternative is difficult to access. The alternative that is true in the positive sentence is the negative answer to the polar question (*He didn’t ace it*). There is evidence that negative answers are quite generally more difficult to retrieve from the context than positive answers when they are not mentioned explicitly.37 Consider the following minimal pair, pointed out to me by Sabine Iatridou (p.c.):

(84)  
a. Do you want to live a long life? Then eat lots of vegetables and get regular exercise.

b. Do you want to die young? #Then eat lots of vegetables and get regular exercise.

These examples differ in which answer to the polar question must be accommodated in order for the continuation to make sense. In (84-a), the positive answer (*Yes, I want to live a long life*)...
long life) is easily accommodated; in (84-b), however, the roughly equivalent negative answer (No, I don't want to die young) is much more difficult to retrieve than the incongruent positive answer, yielding oddness.

Returning to the example in (79), directly supplying even with the relevant true alternative makes the positive even sentence felicitous.

(85) A: Did Dan ace the test?
    B: No/He didn't ace it – he even failed it!
    B': Not only did he not ace it – he even failed it!

This suggests that the positive sentence in (79) is only unacceptable to the extent that it is difficult to access i) a parse and ii) the relevant alternative that will allow the additive presupposition of even to be satisfied.

2.8 Conclusion

This chapter has explored a puzzle about how even interacts with presupposition denial. We have seen that this puzzle can be explained by properties of even and properties of presupposition denial. More particularly, even introduces an additive presupposition that is in danger of being unsatisfied when the salient focus alternatives contain the trigger for a presupposition that the prejacent denies. The A operator, a tool used to account for presupposition denials in trivalent semantics, prevents the alternatives from being presupposition failures only under negation.

This result has consequences for the semantics of even. The solution to the puzzle presented in this chapter crucially relied on the additive presupposition of even. This presupposition is controversial. Chapter 3 will examine the evidence against its existence and conclude that its role in the account presented here is justified.

This solution also has consequences for how we think about presuppositions generated within focus alternatives. It entails that presuppositions triggered within focus alternatives matter. This is surprising if we think of presuppositions as preconditions for adding a proposition to the common ground. If the analysis presented here is correct, we do not
only pay attention to the presuppositions of the sentences that are asserted but also, in some cases, to presuppositions of alternative sentences that focus-sensitive operators make reference to. This connects the evidence presented in this chapter with a growing body of work showing that presuppositions triggered within focus alternatives generated by other focus-sensitive operators matter (e.g., Mayr & Romoli 2016, Spector & Sudo 2017). What is unique about the puzzle presented here is that this is a case where a presupposition triggered in a focus alternative can have an effect on the acceptability of a sentence that does not itself contain the trigger for the presupposition in question. These presuppositions, which exist only within focus alternatives, have a life of their own.
Chapter 3

Additivity

3.1 Introduction

The previous chapter proposed an analysis of presupposition denials with *even* that relied on *even* (and several of its crosslinguistic relatives) having an additive presupposition in addition to a scalar presupposition. This additive meaning component is controversial. This chapter will be devoted to defending the reality of the additive presupposition of *even*. Section 3.2 will present the arguments that have been made against the additivity of *even* in the literature and show that they do not accurately reflect the relevant data. Section 3.3 will explore predictions of the additive view of *even* for the acceptability of *even* in exhaustive environments. Section 3.4 will examine the behaviour of *even* in disjunctions. Section 3.5 will refine the notion of additivity under discussion and explore how the additive component of *even* may differ from the additive component of purely additive items. Section 3.7 provides a summary and outlines some questions that are left open by this chapter.

3.2 Mutually exclusive alternatives

So far, we have assumed that *even* presupposes both that its prejacent is the least likely of its alternatives and that there is at least one alternative distinct from the prejacent that is true. The latter presupposition should make *even* infelicitous when it encounters a set of alternatives that are mutually incompatible with each other. However, it has been claimed
that the additive presupposition of *even* is not active when its alternatives are mutually exclusive (von Stechow 1991, Krifka 1992, Rullmann 1997, Crnič 2011a). This claim is based on the alleged acceptability of two kinds of examples.

The first kind of example involves *even* and *only* co-associating with the same constituent, as in (1). The exclusive semantics of *only* should be incompatible with the additive requirement of *even* when these operators co-associate with the same constituent.

(1)  **Context:** *At yesterday’s party, people stayed with their first choice of drink. Bill only drank wine, Sue only drank beer, and John even only drank [water]_{f_1, f_2}.

John even_1 only_2 drank [WATER]_{f_1, f_2}.  

(Krifka 1992: 22)

The second kind of example involves cases where the salient alternatives are incompatible with the prejacent by virtue of world knowledge. In (3), the alternatives to *bronze* in the context of medals are *silver* and *gold*, but one cannot win multiple medals for the same event.

(2)  A: Mary won a bronze medal.  

B: No, she even won a silver medal.  

(Crnič 2011a:152)

To explain the alleged acceptability of these examples, various modifications to the meaning of *even* have been proposed. For example, Crnič (2011a) formulates the additive presupposition so that it only applies when the alternatives are not mutually exclusive. Rullmann (1997), on the other hand, eliminates this presupposition from the lexical entry for *even* entirely, deriving the additive inference instead by pragmatic reasoning. If either of these positions is correct, our analysis cannot stand; if *even* does not introduce an additive requirement when the alternatives are mutually exclusive, we should predict the positive

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1. Roger Schwarzschild (p.c.) points out that there could in principle be a difference between each of the alternatives being incompatible with each of the other alternatives and each of the alternatives being incompatible with the prejacent. Strictly speaking, the semantics for *even* that we are assuming should be sensitive to the latter, but the examples that we have considered all meet the former, stronger condition.

2. One might be concerned that there is also something wrong with the scalar presupposition, since *silver* is in the middle of the medals scale; however, nothing changes if we replace *silver* with the endpoint value *gold*.
presupposition denials with even to be acceptable, contrary to fact.

However, it turns out that these data do not show what they have been claimed to show. I have been unable to reproduce these judgement reported in (2); the native speakers that I have consulted judge even to be infelicitous in this example.\(^3\) This is consistent with even having an additive presupposition. The case of (1) is more complicated; native speakers of English do judge the use of even in this example to be felicitous. However, as Wilkinson (1996) observes, the alternatives made salient in the context that Krifka provides are not mutually exclusive propositions of the form John only drank x; they are propositions of the form y only drank x. This licenses a different parse entirely, where only associates with the object and even associates with both subject and object, as in (3).\(^4\) Under this parse, the alternatives that even considers (3) are no longer mutually exclusive.\(^5\)

(3) Context: Same as (1) above.

\[
\begin{align*}
[\text{JOHN}]_{(1)} \text{ even}_1 \text{ only}_2 \text{ drank } [\text{[WATER]}_{(2)}]_{(1)}. \\
\text{a. } & \text{ LF = even}_c \text{ only}_c \text{ [John} \text{ drank } \text{[water]}_{(2)}]_{(1)} \\
\text{b. } & \text{ } C_2 = \left\{ \begin{array}{l}
\text{[John drank water],} \\
\text{[John drank beer],} \\
\text{[John drank wine]} \\
\text{[only}_c \text{ [John drank } \text{[water]}_{(2)}]\text{]}]
\end{array} \right.
\text{c. } C_1 = \left\{ \begin{array}{l}
\text{[only}_c \text{ [Sue drank [beer]}_{(2)}]\text{]},} \\
\text{[only}_c \text{ [Bill drank [wine]}_{(2)}]\text{]}\end{array} \right.
\end{align*}
\]

(3) (adapted from Wilkinson 1996: 205)

This diagnosis is supported by the fact that there is a clear contrast between (1) and (4),

\(^3\)If there are speakers for whom sentences like (2) are acceptable, this could indicate a charitable reinterpretation of a silver medal as something (at least) as good as a silver medal. On this interpretation, the alternatives are no longer incompatible with each other. The question then becomes i) whether this sort of charitable interpretation is always available, and ii) if not, why not.

\(^4\)It is more likely that the subject is a contrastive topic here. Zimmermann (2015) argues that even's additive component is sensitive to alternatives generated by topic in addition to those generated by focus. Interestingly, he argues that the scalar presupposition of even is only sensitive to alternatives generated by focus.

\(^5\)I believe that this is corroborated prosodically. The subject cannot deaccented, even in a discourse where John has previously been mentioned.
where the context makes salient alternatives that are truly mutually exclusive.⁶

(4) Context: At the party last night, John stayed with his first choice of drink. You’ll never guess what he chose.

#He even₁ only₂ drank [water]ₕ₁,ₕ₂.

a. LF: even₁ [only₂ C₂ [he drank [water]ₕ₁,ₕ₂] ± [he drank [water]ₕ₁,ₕ₂]]
b. C₂ = {[he drank beer], [he drank wine] ± [he drank [water]ₕ₂]}
c. C₁ = {[only₂ C₂ [he drank [beer]ₕ₂]], [only₂ C₂ [he drank [wine]ₕ₂]] ± [he drank [beer]ₕ₁,ₕ₂]}

Thus, even is unacceptable when the alternatives it encounters are mutually exclusive but acceptable when the alternatives are not mutually exclusive. This is exactly what we should expect if the additive presupposition of even is active, but quite difficult to explain otherwise.

3.3 Exhaustivity

We have seen that even is incompatible with mutually exclusive alternatives, contrary to what has been claimed in the literature. This suggests that it has an additive component. If even requires that the prejacent is not the only alternative in C that is true, we might expect it to be incompatible with other kinds of exclusivity. Here we will consider two contexts that seem to fit the bill: mention-all (vs. mention-some) readings of questions and it-clefts, both of which give rise to exhaustive inferences.

Wh-questions are said to have two possible interpretations. The default is a mention-all reading, which is felicitously answered by providing an exhaustive answer to the question. For example, in the scenario described in (5), a mention-all answer to the question Where
can a person get coffee around here? would be At The Sidekick, The Remarkable Bean, or Tango Coffee Palace. A mention-some reading of the question, however, will be satisfied by an answer such as At The Sidekick, because this use of a question only asks for a true answer, not a complete true answer.

(5) Context: There are three coffee-selling establishments in Leslieville: The Remarkable Bean, Tango Coffee Palace, and The Sidekick. That the first two are cafes is obvious to anyone walking by. However, to the casual observer The Sidekick appears to be just a comic book store, but inside it turns out to be a combination of comic book store and café.

A: Where can a person get coffee around here?
B: At The Remarkable Bean, Tango Coffee Palace, and The Sidekick. mention-all
B': At The Sidekick. mention-some

The conditions under which a mention-some readings arise will not concern us here. What is important for our purposes is that even appears to be incompatible with mention-all answers to questions; they are, however, compatible with mention-some answers. This is illustrated in (6).

(6) Mention-some context: Speaker A is a graduate student in desperate need of an afternoon caffeine boost in Leslieville.

A: Where can a person get coffee around here?
B: Several places! Even at The Sidekick.

(7) Mention-all context: Speaker A is a coffee shop inspector, tasked with checking that all coffee served in Leslieville meets government standards.

A: Where can a person get coffee around here?
B: Several places! #Even at The Remarkable Bean, Tango Coffee Palace, and The Sidekick.

This incompatibility is exactly what we should expect if even requires an alternative distinct
from the prejacent to be true. Here, the question introduces a set of alternatives covering different locations where the students could have stopped for gas and asks for an answer denoting the maximal set of such locations that the students did in fact visit. If B's answer is taken to provide such an answer, there can be no other locations where the students stopped for gas. This means that the additive presupposition of *even* cannot be satisfied. Note that the problem is not the scalar presupposition; the gas station next to the department is an unlikely place for the students to have stopped for gas, because it appears to be closed. In C, which provides a mention-some answer, there is no failure of the additive presupposition; precisely because this answer is read as a partial answer, it entails the existence of other answers that can satisfy the additive presupposition of *even*.

In addition to being incompatible with mention-all answers to questions, it is well known that *even* cannot associate with the pivot of an *it*-cleft (König 1991). This is demonstrated in (8).

(8) #It was even [Elizabeth]e who wrote this paper.

This is exactly as we should expect if *even* is additive, because *it*-clefts are exhaustive: (9) conveys that Elizabeth was the only one who wrote the paper, as evidenced by the infelicity of the continuation in (9).

(9) It was Elizabeth who wrote this paper... #Bronwyn was her co-author.

Thus, *even* is incompatible with exhaustive inferences about its focus associate. This is exactly what we should expect if *even* is additive.

### 3.4 Conjunctive readings of disjunctions

Keny Chatain (p.c.) observes that there is variation in the acceptability of *even* in disjunctions depending on whether the disjunction is embedded or not, illustrated in (10).

(10) a. ??Mary speaks French, or even Romanian.

b. She doesn't speak the language of her country, or even the language of her
parents.
c. If she speaks French, or even Romanian, she will be fine in Croatia.
d. Everyone who spoke French, or even Romanian, had no problem in Croatia.
e. Our visitor may speak French, or even Romanian.

These data raise two puzzles. Firstly, there is the puzzle of the contrast in acceptability between the unembedded disjunction with *even* in (10-a) and the embedded disjunctions with *even* in (10-b)-(10-e). Chatain observes that what sets the disjunctions in (10-b)-(10-e) apart from that in (10-a) is that the former have conjunctive entailments. That is, they all obey the schema in (11).

\[
\text{(11) } \text{Op}(p \lor q) \Rightarrow \text{Op}(p) \land \text{Op}(q)
\]

a. \(\text{NEG} [p \lor q] \Rightarrow \text{NEG} [p] \land \text{NEG} [q]\)
b. \(\Box [p \lor q] [r] \Rightarrow \Box [p] [r] \land \Box [q] [r]\)
c. \(\forall x [P(x) \lor Q(x)] [R(x)] \Rightarrow \forall x [P(x)] [R(x)] \land \forall x [Q(x)] [R(x)]\)
d. \(\lozenge [p \lor q] \Rightarrow \lozenge [p] \land \lozenge [q]\)

How might this be relevant to the licensing of *even* in the second disjunct? That is, what goes wrong in (10-a) and goes right in (10-b)-(10-e)? A plausible answer is the additive presupposition of *even*. In unembedded environments, disjunctions usually trigger an ignorance inference; that is, they imply that the speaker is unsure of which of the disjuncts is true. *A fortiori*, they imply that, if both disjuncts are true, the speaker is unaware of it.

Let us assume that *even* scopes over the second disjunct at LF, as shown in (12) for (10-a).

\[
\text{(12) } \text{??Mary speaks French, or even Romanian.}
\]

a. LF: [Mary speaks French] or \([\text{even}_C \ [\text{Mary speaks [Romanian]}_F]]\)

---

7I assume that disjunction always operates on sentential arguments, even when it appears to link smaller constituents, just as Hirsch (2017) argues for conjunction. I therefore assume that there is unpronounced structure in the second disjunct of each of the examples above (i.e., that *Mary speaks French or even Romanian* is really *Mary speaks French or Mary speaks Romanian*).
In this position, *even* will have access to alternatives of the form *Mary speaks x*.

If the speaker is ignorant about which languages Mary speaks, they cannot very well presuppose that Mary speaks some language in addition to Romanian. This is in spite of the fact that the first disjunct (*Mary speaks French*) makes salient precisely the right sort of alternative, and that it is compatible with the meaning of disjunction that both disjuncts are true.

In contrast, when disjunction is embedded as in (10-b)-(10-e), the ignorance inference disappears and a conjunctive meaning arises. The first conjunct should therefore be able to satisfy the additive presupposition of *even* in the second conjunct. However, the conjunctive meaning that arises from these embedded disjunctions is one where what is conjoined is the result of applying the embedding operator to each of the disjuncts, not the disjuncts themselves. Yet in each case, it appears that the interpretation is one where *even* scopes over the second conjunct of the conjunctive meaning, as schematized in (13).

(13) \[ \text{Op}(p \lor \text{even } q) \Rightarrow \text{Op}(p) \land \text{even} (\text{Op}(q)) \]

a. \[ \text{NEG } [p \lor \text{even } q] \Rightarrow \text{NEG } [p] \land \text{even } [\text{NEG } [q]] \]

b. \[ \Box [p \lor \text{even } q] [r] \Rightarrow \Box [p] [r] \land \text{even } [\Box [q] [r]] \]

c. \[ \forall x [P(x) \lor \text{even } Q(x)] [R(x)] \Rightarrow \forall x [P(x)] [R(x)] \land \text{even } [\forall x [Q(x)] [R(x)]] \]

d. \[ \Diamond [p \lor \text{even } q] \Rightarrow \Diamond [p] \land \text{even } [\Diamond [q]] \]

How does *even* receive this interpretation? There is no level of representation at which Op(q) is the sister of even; this means that there is no level of representation at which Op(q) can serve as its prejacent, and so Op(p) should not be what satisfies the additive presupposition of even. Yet it is also clear that q alone cannot be the prejacent, and p is not what satisfies the additive presupposition.

To sharpen the intuition, let us examine the case in (10-b), where the embedding operator is negation. One is usually more likely to speak the language of one’s parents than the language of one’s country; after all, a child’s first linguistic experiences are usually with
their caregivers. Let us suppose that even takes scope over the second disjunct in (10-b), yielding the LF in (14).

(14) She doesn’t speak the language of her country, or even the language of her parents.

a. LF: \( \text{NEG} \left[ \left[ \text{she speaks the language of her country} \right] \text{ or } \left[ \text{even} \left[ \text{she speaks the language of her parents} \right] \right] \right] \)

b. \( C = \left\{ \right. \text{she speaks the language of her parents,} \left. \text{she speaks the language of her country} \right\} \)

From this position, even will encounter the set of alternatives in (14). Its scalar presupposition will require that it is less likely that Mary speaks the language of her parents than that she speaks the language of her country; this presupposition is not satisfied in plausible contexts. Even’s additive presupposition will require that Mary both speaks the language of her parents and that she speaks the language of her country; this is incompatible with the truth conditions of the sentence which asserts that Mary speaks neither language. Even must therefore take scope outside of the downward-entailing environment introduced by negation. Intuitively, what even’s scalar presupposition compares are the propositions that Mary does not speak the language of her country and that Mary does not speak the language of her parents (i.e., \( \text{NEG} \left[ \text{she speaks the language of her country} \right], \text{NEG} \left[ \text{she speaks the language of her parents} \right] \)). The conjunctive truth conditions of the sentence that is pronounced ensures that both of these propositions are true, thus satisfying the additive presupposition of even.

However, the only way that even can do so will be to take scope over the entire negated disjunction, as in (15-a); \( \text{NEG} \left[ \text{she speaks the language of her country} \right] \) is not a constituent of the sentence that is pronounced. The alternatives that even has access to in this position are not of the form neg \((p)\); they are instead of the form neg \((p \text{ or } q)\), as shown in (15-b).

(15) She doesn’t speak the language of her country, or even the language of her parents.

a. LF: \( \text{even} \left[ \text{NEG} \left[ \left[ \text{she speaks the language of her country} \right] \text{ or } \left[ \text{she speaks the language of her parents} \right] \right] \right] \)
b. \[ C = \{ \text{NEG [[she ... of her country] or [she ... of her parents]]}, \]
\[ \text{NEG [[she ... of her country] or [she ... of her country]]} \}\]

The non-prejacent alternative in (15-b) was constructed from the prejacent by replacing \textit{parents} with \textit{country}, the expression that occupies the corresponding position in the other disjunct. The first disjunct makes this constituent salient and therefore attractive as a substitution for the focused constituent. Let us suppose that these are in fact the only alternatives that are salient. When \textit{even} is supplied with these alternatives, will it be defined, and will its presuppositions match with the intuitions described above?

Each of the alternatives in (15-b) will have conjunctive meanings. More particularly, the non-prejacent alternative has as its meaning a conjunction of two instances of the same proposition, namely \textit{She doesn’t speak the language of her country}. Because the conjuncts are identical, this conjunction is equivalent to \textit{She doesn’t speak the language of her country}, as shown in (16).

\begin{align}
(16) & \quad \text{NEG [[she ... of her country] or [she ... of her country]]} \\
& = 1 \text{iff NEG [she ... of her country] } \& \text{NEG [she ... of her country]} \\
& = 1 \text{iff NEG [she ... of her country]} \\
\end{align}

The prejacent has as its meaning the conjunction of that proposition and the proposition \textit{She doesn’t speak the language of her parents}. This conjunction is in an upward-entailing environment and therefore entails each of its conjuncts.

\begin{align}
(17) & \quad \text{NEG [[she ... of her country] or [she ... of her parents]]} \\
& = 1 \text{iff NEG [she ... of her country] } \& \text{NEG [she ... of her parents]} \\
\end{align}

The prejacent thus entails the non-prejacent alternative. Both the scalar and the additive presupposition of \textit{even} will thus be trivially satisfied. By this calculation, the relative likelihood of the two disjuncts plays no role in the computation of \textit{even}’s presuppositions. This does not accord with native speakers’ intuitions about these sentences; the sentences in (18) are felt to have different meanings. If the contribution of \textit{even} is trivial, it should make no difference which disjunct hosts \textit{even}. 

80
I would like to suggest that the solution to this puzzle lies in how conjunctions are processed. In dynamic terms, when a conjunction is interpreted the first conjunct is added to the context first, and the second conjunct is interpreted relative to a local context that has already been updated with the first conjunct (Heim 1983; see Schlenker 2009 for a non-dynamic reworking). Comparing the likelihood of two conjunctions with identical first conjuncts \((p \land q)\) and \((p \land r)\), then, is equivalent to comparing the likelihood of the second conjuncts \((q, r)\) once the first conjunct has been processed. Thus, if the conjunction (19-a) is less likely than the one in (19-b), then the second conjunct (19-a), (20-a), is less likely than the second conjunct of (19-b), (20-b).\(^8\)

### (19)

|   | a. [NEG [she ... of her country] \(\land\) NEG [she ... of her parents]] | b. [NEG [she ... of her country] \(\land\) NEG [she ... of her country]] |
|---|--------------------------------------------------------------------------|

### (20)

|   | a. [NEG [she speaks the language of her parents]] | b. [NEG [she she speaks the language of her country]] |
|---|--------------------------------------------------|

This allows even to effectively ignore the first conjunct in each alternative and compare the likelihood of She doesn’t speak the language of her parents and She doesn’t speak the language of her country.

I assume that this analysis can be extended to disjunctions in the restrictors of universal quantifiers and conditionals, as both are downward-entailing environments where even is expected to take wide scope.\(^9\)

---

\(^8\)More work needs to be done here to figure out i) how to think about the processing of these disjunctions so that their conjunctive entailments are what updates the context, and ii) how presupposition projection works in these cases.

\(^9\)Free choice disjunctions like (10-e) may represent a problem here, as they are not obviously downward-entailing. The simplest option is to assume that wide scope is licensed in any non-upward-entailing environment, if free choice introduces a non-monotonic environment. Alternatively, one could assume that even takes a world argument and remains in its embedded position. Its scalar presupposition would be satisfied just in case the speaker’s epistemic state allows that it is less likely that the visitor speaks French than that she
3.5 Strong vs. weak additivity

In an unpublished 2013 manuscript, Michael Wagner argues that *even* has two lexical entries that differ in their additive components. He is interested in contrasts between the behaviour of *even* when it is spelled out in the two positions in (21).

(21)  
\begin{enumerate}
  \item Laura solved even the [hardest]$_F$ problem.
  \item Laura even solved the [hardest]$_F$ problem.
\end{enumerate}

Wagner refers to the former instance of *even* as *VP-even* and the latter as *NP-even*.\(^\text{10}\) I will instead refer to them as *sentential-even* and *constituent-even*, respectively, following the terminology in Erlewine 2017. Wagner observes that, when the prejacent is in an entailment relation with the salient alternatives, there is a contrast in acceptability between the two *evens*, as demonstrated in (22).

(22)  
\begin{enumerate}
  \item A: Did John read some of the books?
  \item B: #John read even ALL of the books.
  \item B’: John even read ALL of the books.
\end{enumerate}

(Wagner 2013: 10)

This is in contrast to cases where the prejacent does not entail the salient alternative; this is demonstrated in (23).

(23)  
\begin{enumerate}
  \item A: Did Jane read the easy books?
  \item B: Jane read even the HARD books.
  \item B’: Jane even read the HARD books.
\end{enumerate}

Wagner observes that additive operators like *also* pattern with constituent *even* in this respect.

\footnote{Wagner assumes that focus-sensitive operators trigger movement of their associate, and take their associate as their first argument; he is therefore able to encode the difference between these two *evens* as a type difference in their lexical entry. I will instead continue to assume that *even* operates according to the assumptions laid out in Chapter 1; the difference between the two *evens* could be encoded as a presupposition about the nature of the focus-associate.}

speak Romanian, and the additive presupposition would be satisfied if there is an epistemically accessible world where the visitor speaks both French and Romanian.
(24) A: Did John read SOME of the books?  
    B: John also read ALL of the books.

(25) A: Did Jane read the easy books?  
    B: Jane also read the HARD books.

Wagner argues that also has an additive presupposition that requires that there is an alternative that neither entails nor is entailed by the prejacent that is true. Based on the parallels noted above, Wagner argues that constituent-even has an additive presupposition that cannot be satisfied by alternatives that are in an entailment relation with the prejacent.

Wagner’s work has sometimes been taken to show that sentential-even is not additive, but this view is incorrect;11 Wagner’s evidence simply shows that sentential-even lacks the also-like additive component that constituent-even has. Both evens are incompatible with mutually exclusive alternatives that are not in an entailment relation.

(26) A: Mary won a bronze medal.  
    B: (No.) She won even a SILVER medal.  
    B': (No.) She even won a SILVER medal.

Wagner does not speculate about why these two meanings should exist for even, nor why the weaker additive component belongs to sentential-even and the stronger additive component to constituent-even, rather than the reverse; I will not undertake this task here either. What is important for our purposes is that, although the sentential even that appears in presupposition denials is not additive in the way that constituent-even is, it is nevertheless additive in the sense that it requires alternatives that are compatible with the prejacent.

3.6 A factive puzzle

We have seen evidence that, contrary to what has been claimed in the literature, even triggers an additive presupposition. This section will explore a puzzle about the interaction

---

11This may be a simple terminological misunderstanding; Wagner uses “additive” to mean the strong additive inference of also, not the weaker meaning that we are entertaining.
between even and emotive factive verbs; this puzzle has been used to argue against the additive presupposition of even. While I will not be able to account for the puzzle in full, I will show that it does not provide straightforward evidence against the additive presupposition of even.

3.6.1 The missing factive additive presupposition

It has been observed since Rullmann (1997) that the additive inference that we would expect even to generate in certain sentences with emotive factive predicates is conspicuously absent when even surfaces in the embedded clause, as shown in (27) and (28).

(27) a. I’m even sorry that I missed [one] class.
   \(\neg\) I’m sorry that I missed \(n>1\) classes.
   \(\neg\) I missed \(n>1\) classes.

   b. I’m sorry that I even missed [one] class.
      \(\neg\) I’m sorry that I missed \(n>1\) classes.
      \(\neg\) I missed \(n>1\) classes.

   c. I’m sorry that I missed even [one] class.
      \(\neg\) I’m sorry that I missed \(n>1\) classes.
      \(\neg\) I missed \(n>1\) classes.

(28) a. I’m even glad that I got [one] ticket.
   \(\neg\) I’m glad that I got \(n>1\) tickets.
   \(\neg\) I got \(n > 1\) tickets.

12 Rullmann makes this point for be sorry, which is Strawson downward-entailing. The only other case discussed in detail in the literature is be glad, originally discussed by Kadmon & Landman (1993) and elaborated upon by Crnič (2011a,b). As Crnič notes, glad has been variously analyzed as Strawson upward-entailing (by von Fintel 1999) and Strawson non-monotonic (by Heim 1992). Both sorry and glad lend themselves to a desire- or preference-based account. However, I believe that the same pattern can be observed for other emotive factives for which an account in terms of desires/preferences is less obvious, such as be annoyed.

(i) a. I’m even annoyed that I got [one] question wrong.
   b. I’m annoyed that I even got [one] question wrong.
   c. I’m annoyed that I got even [one] question wrong.

It is my hope that emotive factives like annoy can be decomposed into FACTIVE and a non-upward-entailing element.
b. I’m glad that I **even** got [one] tickets.
   \[\not \] I’m glad that I got \(n > 1\) tickets.
   \[\not \] I got \(n > 1\) tickets.

c. I’m glad that I got **even** [one] ticket.
   \[\not \] I’m glad that I got \(n > 1\) tickets.
   \[\not \] I got \(n > 1\) tickets.

Crnič (2011b) describes the logic of these examples as follows. Because **even** associates with a low scalar endpoint (here, the numeral **one**), the scalar presupposition of **even** can only be satisfied if it is separated from its associate by a non-upward-entailing operator. The emotive factive verb in the matrix clause is a straightforward candidate. **Sorry** is Strawson downward-entailing, and is therefore a suitable option.\(^{13}\) Crnič observes that desire predicates like **glad** can introduce a non-monotonic environment if i) they have a preference-based semantics, as in Heim (1992), or ii) they have an upward-entailing Hintikkan semantics, as in von Fintel (1999), but a covert exhaustifying operator is inserted above the attitude verb. Crucially, if we assume that **even** must scope over the embedding factive predicates (or a higher **exh**), we expect all of the sentences in (27)-(28) to assign the same LF position to **even**. In that position, it should take alternatives of the form **I’m sorry** that I missed \(n\) classes and **I’m glad** that I got \(n\) tickets, respectively. This means that we predict the additive presupposition in (28-a)-(28-c) to be that the speaker is glad that they got some number of tickets other than one. Thanks to the factivity of **glad**, this means that (28-a)-(28-c) should presuppose that the speaker got some number of tickets other than one – that is, that they got more than one ticket. This is correct for (28-a), but not for (28-b) and (28-c). The same is true, **mutatis mutandis**, for the **sorry** sentences.

Thus, the existing literature has correctly observed that the predicted factive additive inference is not attested when **even** is spelled out in the embedded clause. The responses to this problem that have been proposed involve making sure that the additive presupposition of **even** does not arise in these cases; it is therefore important for an additive semantics of

\(^{13}\) Or is it? Notice that constituent-**even** in (27-c) is acceptable. This suggests that the alternatives that this **even** encounters are not in an entailment relation; otherwise, the strong additive presupposition of constituent-**even** would be unsatisfied, and this sentence would be infelicitous.
even to be able to capture these data. Rullmann’s response to this is the same as his response to the data outlined in Section 3.2: he argues that even has no additive presupposition. If even triggers no additive presupposition, it is unsurprising that it does not trigger an additive presupposition in the low even cases. Crnič (2011a), on the other hand, suggests that even be decomposed into scalar and additive heads (SCAL and ADD) which can scope independently of each other. In the cases where even is spelled out below glad, he argues that the scalar head takes scope above the factive verb while the additive head takes scope below it, as schematized in (29).

\[(29)\quad \text{I'm glad I got even [one]}_f\text{ ticket.}\]

\[\begin{align*}
\text{a. } & \quad \text{LF: SCAL}_2 [I'm \text{ glad } [\text{ADD}_1 [I \text{ got [one]}_f \text{ ticket.}]]] \\
\text{b. } & \quad C_1 = \left\{\begin{array}{l}
I \text{ got one ticket,} \\
I \text{ got two tickets,} \\
I \text{ got three tickets...}
\end{array}\right\}
\]

Crnič weakens the additive presupposition so that it is stipulated to only apply to propositions that are more likely than (and consistent with) its prejacent. In the embedded position, ADD will have access to the set of alternatives in (29-b); all of the non-prejacent alternatives in this set entail the prejacent and are therefore less likely than it, meaning that no additive presupposition is generated. In both cases, then the solution has been to deny that any additive presupposition is generated when even is spelled out low.

However, a weaker version of the expected additive presupposition is detectable. While there is no requirement that the speaker got some number of tickets greater than one when even is spelled out low, it is required that getting more than one ticket is compatible with the speaker’s desires. This is demonstrated by the infelicity of the continuations in (30). Note that this requirement that getting more than one tickets is compatible with the speaker’s desires is also present when even is spelled out high, but there it falls out from the attested factive additive presupposition. When no such factive additive presupposition arises, however, this inference is surprising.

\[(30)\quad \text{a. I'm glad I got even one ticket... #thank goodness I didn't get more.}\]
b. I'm **even** glad I got one ticket... #thank goodness I didn’t get more.

To summarize, the data presented above will shape the solution in the following ways. I will focus on *glad* here, which I take to be like *wish* with the addition of a factive presupposition. To be precise about what the facts do and do not teach us, it will be useful to talk about these meaning components separately. The fact that the scalar presupposition of *even* is satisfied in both the low and the high spellout cases indicates that *even* takes scope over a non-monotonic operator regardless of its surface position. This non-monotonic operator could in principle be the desire predicate itself (on a Heimian semantics for desire) or a supervening *exh* operator (on a von Fintelian semantics for desire). In either case, the fact that the scalar presupposition is satisfied requires that *even* scopes above the desire portion of *glad*. The fact that the high spellout of *even* is permitted suggests that the low- and high-spellout cases yield different meanings. This is confirmed by the observation that the high spellout of *even* yields a factive additive inference while the low spellout of *even* does not. The weaker, non-factive additive inference observed for the low spellout of *even* suggest that *even* takes scope over the desire-portion of *glad* in all cases, but that the factive component of *glad* is only active within the focus alternatives for *even* when *even* is spelled out high.

### 3.6.2 Likelihood

Crnič (2011a) observes\(^\text{14}\) that sentences like *I’m glad I even got [one] ticket* are only acceptable in contexts where the attitude holder considers all of the salient alternatives to be unlikely; this amounts to a requirement that the speaker considered it unlikely that they get any number of tickets. This is demonstrated by the contrast between (31), where the unlikelihood requirement is satisfied, and (32), where it is not.

\[
\begin{align*}
(31) & \quad \text{Context: You want to buy tickets for an upcoming Neil Young concert. When you get to the box office, you discover that there is a huge crowd of people clamouring} \\
& \quad \text{for tickets.} \\
\end{align*}
\]

\(^{14}\)Crnic formulates this as a generalization about instances of *even* associating with a weak scalar element in desire statements, but his discussion is restricted to cases where *even* is spelled out below the attitude predicate. It is not clear to me whether this inference actually arises for cases where *even* is spelled out above the attitude predicate.
for tickets. You manage to get the very last one.

A: How do you feel about the number of tickets you got?
B: I’m glad I even got one/I’m glad I got even one!

(32) Context: You want to buy tickets for an upcoming Neil Young concert. When you get to the box office, there is no lineup and there are plenty of tickets left. However, you get distracted by a phone call at the ticket window and mistakenly ask for only one ticket.

A: How do you feel about the number of tickets you got?
B: #I’m glad I even got one/I’m glad I got even one!

Any solution to the puzzle presented above should account for this effect.15

3.6.3 Toward a solution

The desiderata laid out at the end of Section 3.6.1 suggest that decomposing glad into its factive and desire components, so that they can take different scopes with respect to even, might allow us to capture the data.16 How might this work?

The factive component of glad presupposes minimally that the attitude-holder believes that the prejacent of glad is true (i.e., p is true in all of the attitude-holder’s belief worlds), and may also presuppose that the prejacent is true (i.e., p is true in the actual world) (von Fintel 1999). The conditions collapse in the cases that we have been considering, because they involve a first-person subject, but it should not be forgotten that the factive presupposition of glad makes claims about the attitude-holder’s doxastic state. The desire component of glad is somewhat akin to wish (von Fintel 1999); it takes as its modal base a superset

15Crnič (2011a) suggests that the low-likelihood inference arises from the interaction between the scalar presupposition of even and reasoning about how people’s actions are shaped by their desires. More particularly, he proposes that an individual who wants n>1 tickets will only take actions that result in getting n=1 ticket if they believe that it is unlikely that they will get more than one ticket. This proposal seems to rely on the following assumptions, none of which follow from Crnič’s (2011a) account: i) if an individual wants n tickets and it is less likely that that individual wants n tickets than that they want n’>n tickets, they also want n’ tickets; ii) the actions involved in getting at least n tickets are different from those involved in getting n’ tickets.

16I will assume that these components can be thought of as a span of verbal heads (cf. Svenonius 2012, 2016; see also Williams 2003) that are spelled out together as glad.
of the attitude-holder’s doxastically accessible worlds. This is because \textit{wish} involves counterfactual reasoning about what the world would be like if the prejacent were not true (see Heim 1992).\footnote{Not allowing in counterfactual worlds would entail that anything that is (believed to be) true is desired – an undesirable conclusion!}

As a first attempt at a solution, let us consider what would happen if \textit{glad’s} factive component, labelled \textsc{factive} below, took scope over \textit{glad’s} desire component, \textsc{desire}. When \textit{even} is spelled out high, it takes scope above both components of \textit{glad’s} meaning; when it is spelled out low, it can take scope above the desire component but below the factive component. This is illustrated schematically in (33).

\begin{enumerate}
\item Option 1: \textsc{factive} scoping above \textsc{desire}
\end{enumerate}

This structure should allow \textit{even’s} additive presupposition to hold of alternatives that carry a factive inference about getting \(n > 1\) ticket just in case \textit{even} is spelled out above \textit{glad}.

While this might at first seem promising, serious problems arise when one attempts to flesh out what a non-schematic version of (33) would look like. Most crucially, both heads require access to both attitude holder and the proposition that the attitude holder is glad about, in order to access i) the correct set of worlds and ii) the correct proposition that the factive or desire claim is being made about. In order for \textsc{factive} to have access to the identity of the proposition that is true in all of the attitude holder’s belief-worlds in (33), it must be able to look inside the node that it composes with to see what \textsc{desire} composed with. It is also not at all clear how to ensure that both heads can see the attitude holder. Until each of the decomposed heads combines with an individual argument, then, each will have an open argument slot, meaning that the node immediately dominating them will not be of propositional type. This presents a problem for \textit{even} in both of the positions assigned
to it in (33): *even* is not composing with a prejacent of the correct (propositional) type, because *DESIRE* has not yet composed with an attitude holder.

One might attempt to remedy the latter problem by taking the attitude holder of emotive factives to be an internal experiencer argument of *DESIRE*.\textsuperscript{18}

\begin{footnotesize}
\begin{enumerate}
\item Option 1.2: FACTIVE scoping above *DESIRE*, with subject
\end{enumerate}
\end{footnotesize}

This would at least ensure that *even* composes with a propositional constituent in the low-spellout LF, but it would once again require FACTIVE to have access to the identity of the daughters of the node it composes with.\textsuperscript{19}

\begin{footnotesize}
\textsuperscript{18}Care needs to be taken here. Spanning theories only allow a series of heads within the same maximal projection to be realized together. My understanding of these theories is that they rule out discontinuous sets of heads from being spelled out as one item; I believe that the two V heads FACTIVE and DESIRE would be allowed to be spelled out together as *glad* in a structure like the following, provided that the individual who is glad really is an internal argument of the lower verb.

\begin{enumerate}
\item LF of high-spellout, with experiencer argument
\end{enumerate}
\end{footnotesize}

If the individual who is glad is an external argument, generated in the specifier of vP, then the v head would need to intervene between FACTIVE and the subject in order to get the desired scope for *even*. This would make it impossible for FACTIVE and DESIRE to be a span to the exclusion of v.

\begin{footnotesize}
\textsuperscript{19}Straightforward alternatives to this structure would complicate matters differently.
\end{footnotesize}
At this point, we might wonder whether it is perhaps better to have the DESIRE component of *glad* take scope over the FACTIVE component, so that FACTIVE takes the embedded proposition as its argument. On this view, the difference between the high- and low-spellout cases cannot lie in the position of *even* – in both cases, *even* takes scope above both components of *glad*’s meaning. Instead, the difference could lie in whether the structure contains an A operator between the two components of *glad*’s meaning.

(35) Option 2: DESIRE scoping above FACTIVE

<table>
<thead>
<tr>
<th>LF of high-spellout</th>
<th>LF of low-spellout</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>even ( X )</td>
<td>even ( X )</td>
</tr>
<tr>
<td>DESIRE ( X )</td>
<td>DESIRE ( X )</td>
</tr>
<tr>
<td>FACTIVE p</td>
<td>A ( X )</td>
</tr>
</tbody>
</table>

In (35), the low-spellout *even* would have access to alternatives of the form DESIRE A FACTIVE \( p \); this will produce a set of alternatives that assert that what is desired is that (the attitude-holder believes that) \( p \) is true, for various values of \( p \). We therefore do not predict a factive additive presupposition when *even* is spelled out low.

This approach would ensure that, in both the low- and high-spellout structures, *even* can be interpreted as far up in the matrix clause as desired; this means that it will have no trouble taking scope over the subject, and so it should have access to a propositional

\[
\begin{array}{ccc}
X & \text{even} & X \\
& X & p \\
& \text{FACTIVE} & \text{DESIRE} \\
\end{array}
\]

Here, the low spellout of *even* would still not have access to a propositional prejacent, although the lexical entry for FACTIVE could at least be formulated so that it can see \( p \).
prejacent in both cases. The hierarchical ordering of the components of \textit{glad}'s meaning in (35) also bears a resemblance to existing proposals in the domain of decomposing attitude verbs. Kratzer (2006) proposes locating factivity distinctions among attitude verbs in the complementizer rather than in the verbs themselves; that is, Kratzer suggests that English \textit{that} is ambiguous between a factive and a non-factive meaning.\footnote{Kratzer’s proposal appears to be tailor-made for factives like \textit{know}, where what is presupposed is crucially just that \( p \) is true, not that the attitude holder believes \( p \).} A view along these lines would ensure that the factive presupposition is triggered below the desire component of \textit{glad}'s meaning (which, on Kratzer’s view, is in fact the only component of \textit{glad}'s meaning).

However, it should be noted that there will still be a compositional problem. It is not clear what semantic types \textsc{desire} and \textsc{factive} would need to have to ensure that both items make claims about the same attitude holder. Furthermore, this view fails to predict that the low-spellout sentences presuppose that the speaker did in fact get (at least) one ticket. The \textsc{A} operator that does good work in the alternatives cannot be prevented from having an effect in the prejacent.

This section has a somewhat disappointing conclusion. We have not solved the puzzle that we have set out to solve. However, we have still made some progress toward understanding the behaviour of \textit{even} in sentences with emotive factives. Contrary to what has been claimed in the literature, \textit{even} does trigger an additive presupposition when it is spelled out below \textit{glad} and associates with a weak scalar endpoint; however, its additive presupposition does not make a factive claim. How this effect is to be derived is yet to be determined,\footnote{The same is true of the low-likelihood inference reported by Crnič (2011a).} but at the very least we now know that the behaviour of \textit{even} under emotive factives does not provide straightforward evidence against an additive semantics for \textit{even}.

### 3.7 Conclusion

In this chapter, we have seen that \textit{even} is always additive, in the sense that it requires at least one alternative distinct from the prejacent to be true. Thus, \textit{even} is always incompatible with mutually exclusive alternatives and exhaustive environments. However, as
Wagner has observed, instances of *even* attached to sub-sentential constituents are additive in a stronger sense, namely that constituent-*even* requires at least one alternative that is not entailed by (and does not itself entail) the prejacent to be true.\(^{22}\) We have also seen that considering the consequences of *even*'s additive presupposition can help us to understand a puzzling difference in acceptability between *even* in embedded and non-embedded disjunctions and raises important questions about the structure of emotive factive predicates. These questions are left open for future work.

\(^{22}\)Note that, as a consequence of its stronger additive component, constituent-*even* cannot take an entailment-based scale.
Chapter 4

Imperatives

4.1 Introduction

The goal of this chapter is to consider how assuming that even has an additive presupposition can help us to better understand a different area of the grammar, namely imperatives. Section 4.3 will explore a puzzling constraint on the distribution of even in imperatives and show that this constraint can be straightforwardly captured if we assume i) an additive semantics for even and ii) an existential modal semantics for imperatives, with strong readings derived by exhaustification. This can be viewed as both an argument for the additive semantics for even defended in the previous chapter and an argument for the existential modal approach to imperatives. Section 4.4 will provide an additional argument for the existential modal approach to imperatives, showing that the distribution of free choice any in imperatives falls out for free on such a semantics. The accounts in Sections 4.3 and 4.4 use different implementations of the idea that the imperative operator is an existential modal strengthened by exhaustification; Section 4.5 compares these two implementations. Section 4.6 takes stock of evidence for and against the existential modal view of imperatives. Section 4.7 concludes.
4.2 Background

Imperatives are a sentence type whose prototypical function is to assign obligations to discourse participants. However, this is not the only job that they can do; imperatives come in different strengths. They have strong (e.g., command; □) and weak (e.g., acquiescence, indifference; ◊) readings, exemplified in (1)-(3).

(1) A parent is telling their child to eat their broccoli.

         Eat! □_{imp}, command

(2) A: Is it alright if I go ahead and eat?
    B: Sure, go ahead! Eat!

         ◊_{imp}, acquiescence

(3) A: I can’t decide whether to eat or not.
    B: Eat! Don’t eat! I don’t care.

         ◊_{imp}, indifference

Theoretical accounts of imperatives can be divided into two broad camps, each of which is subject to internal variation: so-called modal accounts and minimal accounts (see von Fintel & Iatridou 2017 for a recent overview).

Modal accounts of imperatives hold that imperatives contain a silent modal operator in their left periphery (Schwager 2006/Kaufmann 2012). On this view, an imperative like (4-a) has a structure very similar to the modal statement in (4-b).

(4) a. Run!

    b. You must run.

The main difference between imperatives like (4-a) and modal statements like (4-b) on this view is that the imperative operator introduces presuppositions that ensure that it can only be read performatively, and not as a simple description of the addressee’s obligations.¹

Minimal accounts, on the other hand, hold that imperatives contain no modal operator at all; instead, they denote bare addressee-oriented properties (Hausser 1980, Portner

¹It should also be noted that the target of the imperative modal is restricted to second person, and that the modal is lexically restricted to having a priority flavour, expressing relations to obligations, preferences, desires, and goals.
2007). On this view, the directive force of imperatives comes about pragmatically; instead of updating the Common Ground, imperatives update the To-Do List, a set of properties that the conversational participants are committed to making true of themselves (Portner 2007).

These two approaches differ in several ways. Of crucial importance for the chapter ahead will be that these approaches differ in how they treat variation in the strength of imperatives. On minimal accounts, where the directive force of imperatives is derived pragmatically, differences in the strength of this directive force must likewise be derived pragmatically. There are at least two proposals on the market for how weak readings might arise: as a result of conflicting requirements on the To-Do List (Portner 2012), or by dividing the To-Do List into different sections for obligations with different strengths or sources (von Fintel & Iatridou 2017). On modal accounts, where the directive force of imperatives is located in their syntactic structure, the difference between strong and weak imperatives is likewise represented in the structure. One way of deriving differences in strength, proposed by Grosz 2011a, is to say that the imperative operator is ambiguous between an existential and a universal modal. On this view, the difference between strong and weak readings of imperatives lies in which of these two silent modal operators is inserted. An alternative, proposed by Schwager (2005) and defended by Oikonomou (2016), is to assume that imperatives are underlyingly existential modals, with strong readings derived by exhaustification. On this view, the difference between strong and weak readings of imperatives lies in whether an exhaustifying operator is present in the structure of the imperative.

In this chapter, I will defend an existential modal semantics for imperatives. I will consider two ways of strengthening the imperative modal. In the next section, I will adopt an implementation of this idea proposed by Schwager (2005) and Oikonomou (2016), where strengthening is performed by exhaustifying over alternatives differing in the content of the prejacent of the modal. In the following section, I will explore a method for strengthening existential modals borrowed from Bassi and Bar-Lev’s (2016) existential analysis of con-
ditionals, where strengthening is performed by exhaustifying over alternatives differing in the domain of the modal. Toward the end of the chapter, we will consider whether either of these methods of strengthening has an advantage over the other.

4.3 Imperatives under *even*

4.3.1 The puzzle

*Even* tracks the distinction between strong and weak imperatives in a surprising way: *even* can only take broad focus in imperatives if they receive a weak interpretation, as demonstrated by the contrast between (5) and (6).

(5) Context: Prof. X is invigilating an exam and orders the students to stop writing. Put down your pens. [Close your exam papers] \( \textsf{\#even} \). \( \square \text{imp} \)

(6) Context: Prof. Y is telling students who have been writing an exam that the test will no longer count toward their grades and they are free to do whatever they like. Put down your pens. [Close your exam papers] \( \textsf{even} \). \( \Diamond \text{imp} \)

This restriction does not reflect a general ban on *even* in strong imperatives; when *even* takes narrow scope, it is compatible with command readings, as shown in (7).

(7) Report *even* the [smallest] \( \textsf{F} \) change in the patient’s condition. \( \square \text{imp} \)

There is likewise no ban on *even* taking broad focus in expressions of obligation; there is no contrast between strong and weak modal statements with broad focus *even*, as shown in (8) and (9).

(8) Context: Prof. X is invigilating an exam and orders the students to stop writing. You have to put down your pens. You *even* have to [close your exam papers] \( \textsf{F} \).

(9) Context: Prof. Y is telling students who have been taking an exam that the test will
no longer count toward their grades and they are free to do whatever they like.

You’re allowed to put down your pens. You’re even allowed to [close your exam papers].

The goal of this section is to explain the distribution of even summarized in (10).

\[(10)\]

\[
\begin{align*}
\text{a. } & \text{even } [\Diamond_{\text{mod}} [p]_F] \\
\text{b. } & \text{even } [\Box_{\text{mod}} [p]_F] \\
\text{c. } & \text{even } [\Diamond_{\text{imp}} [p]_F] \\
\text{d. } & \#\text{even } [\Box_{\text{imp}} [p]_F]
\end{align*}
\]

To do this, we will need to explain what makes strong imperatives (10-d) different from both weak imperatives (10-c) and strong modals (10-b).

The remainder of this section is organized as follows: Section 4.3.2 outlines some assumptions about imperatives; Section 4.3.3 proposes a solution to the puzzle that makes crucial use of the additive presupposition of even; Section 4.3.4 discusses an additional discourse effect contributed by even in weak imperatives; and Section 4.3.5 explores the consequences of the proposal for our understanding of imperatives.

4.3.2 Toolkit

In this section, I will assume that the imperative operator is underlyingly weak (\(\Diamond\)), with strong readings derived by exhaustification (Schwager 2005, Oikonomou 2016). I will assume the implementation of this idea developed by Oikonomou (2016), where this strengthening is performed by \(exh\), a covert counterpart of \(only\). This operator is independently used to account for strengthening phenomena elsewhere in the grammar, namely in the derivation of scalar implicatures and free choice effects, and has a denotation as in (11) (Fox 2007).

\[(11)\quad [[exh]]^{g,w} = \lambda C_{<s,t>} \cdot \lambda p_{<s,t>}, p(w) = 1 \land \forall q \in IE(p, C) [\neg q(w)]\]

According to this denotation, \(exh\) asserts its prejacent and negates all innocently excludable
(IE) alternatives – that is, all members of the largest non-arbitrary set of alternatives in C that can be jointly negated without contradicting the prejacent.\(^3\) In the cases we are considering, all non-prejacent alternatives will be innocently excludable.

Oikonomou (2016) derives strong readings of imperatives by having \textit{exh} associate with the prejacent of the modal operator as in (12-a).\(^4\) The alternatives that \textit{exh} encounters will be formed by making propositional substitutions for this constituent. Which propositions will make for salient substitutions? Oikonomou (2016) argues that \(\neg p\) will always be salient when \(p\) is salient, and so will always be an appropriate substitution.

The alternatives formed by substituting \(p\) and \(\neg p\) for the focused constituent will be those in (12-b).

\begin{align*}
(12) \quad \text{Strong imperative } p! \text{ (polarity-based alternatives)} & \quad \square_{\text{imp}} \\
\text{a. LF: exh}_C \left[ \Diamond_{\text{imp}} [p]_T \right] \\
\text{b. } C = \left\{ \left[ \Diamond_{\text{imp}} [p] \right], \left[ \Diamond_{\text{imp}} [\neg p] \right] \right\} \\
\end{align*}

When the structure in (12-a) is interpreted, \textit{exh} will assert the prejacent \(\Diamond_{\text{imp}} p\) and negate the alternative \(\Diamond_{\text{imp}} \neg p\). That is, it will assert that \(p\) is permitted and that \(\neg p\) is not permitted. This is equivalent to asserting that \(p\) is required (i.e. \(\square_{\text{imp}} p\)), as shown in (13).

\begin{align*}
(13) \quad \text{exh}(C)(\Diamond_{\text{imp}} p) = [\Diamond_{\text{imp}} [p]] \land \neg[\Diamond_{\text{imp}} [\neg p]] = \square_{\text{imp}} p \\
\end{align*}

Oikonomou (2016) shows that necessity can also be derived as exhaustive possibility

\(^3\)Recently, Bar-Lev and Fox 2017 have proposed an adjustment to this lexical entry; on their semantics for \textit{exh}, what is asserted is not just the prejacent but the innocently includable alternatives, which are understood to be the largest (non-arbitrary) set of alternatives that can be jointly asserted without contradicting the (conjunction of the) prejacent and the negation of the innocently excludable alternatives. We will move to this updated version of \textit{exh} later in this chapter, but for now the two lexical entries would make identical predictions; the prejacent is the only non-excludable alternative in the examples we will consider, and the prejacent is always innocently includable.

\(^4\)Oikonomou takes \textit{exh} to be focus-sensitive, in order to account for cases where placement of prosodic prominence affects what is commanded (or, in other terms, what is ruled out) by a strong imperative. \textit{Exh} is often described as an alternative-sensitive operator, leaving open the possibility that it might be sensitive to alternatives other than focus alternatives (i.e., so-called formal alternatives). It is not clear how tenable the latter view is in light of Fox and Katzir’s (2011) arguments for structurally defined alternatives. However, it is equally unclear how, on the former view, differences in prosodic marking requirements for associates of focus-sensitive operators like \textit{even} and putative associates of \textit{exh} are to be understood.
with substitutions of the form $p, q, r$ instead of $p, \neg p$, when the context makes salient such substitutions. The resulting alternatives, given in (14), will yield the meaning in (15).\(^5\) If we assume that $p, q,$ and $r$ cover the entire space of possibilities for future courses of action (i.e., the addressee must do one of these actions), and that neither $q$ nor $r$ is entailed by $p$, the outcome will be equivalent to adopting polarity-based alternatives (cf. Schwager 2005): the addressee is permitted to do $p$ and not permitted to take any other course of action.

(14) Strong imperative $p!$ ($p, q, r$-based alternatives)

\begin{enumerate}
  \item LF: $\text{exh} C \left[ \Diamond_{\text{imp}} [p]_F \right]$
  \item $C = \left\{ \left[ \Diamond_{\text{imp}} [q]_F \right], \left[ \Diamond_{\text{imp}} [r]_F \right] \right\}$
\end{enumerate}

(15) $\text{exh}(C)(\Diamond_{\text{imp}} p) = [\Diamond_{\text{imp}} [p]_F] \land \neg[\Diamond_{\text{imp}} [q]_F] \land \neg[\Diamond_{\text{imp}} [r]_F] = \Box_{\text{imp}} p$

### 4.3.3 Proposal

The assumptions made in Section 4.3.2 allow us to reformulate the distribution of $\textit{even}$ from (10) as in (16).

(16) \begin{enumerate}
  \item $\text{even} [\Diamond_{\text{mod}} [p]_F]$
  \item $\text{even} [\Box_{\text{mod}} [p]_F]$
  \item $\text{even} [\Diamond_{\text{imp}} [p]_F]$
  \item $\text{#even} [\text{exh} [\Diamond_{\text{imp}} [p]_F]]$
\end{enumerate}

\(^5\)If we adopt the $p, q, r$-based alternatives for deriving strong imperatives, we will need to say something more to allow for sequences of strong imperatives. Sequences of strong imperatives are felicitous, as shown in (i).

(i) Put down your pens. Close your exam papers.

If we derived the strong imperative $\textit{Put down your pens}$ by negating the possibility of closing exam papers, or if we derived the $\textit{Close your exam papers}$ by negating the possibility of putting down pens, we would incorrectly predict these commands to be incompatible with each other. Two options come to mind. The first is to introduce a dynamic element into our system, so that what is not permitted at the point where the first imperative is added to the context may no longer be forbidden when the second imperative is added to the context. The second option is to say that different $p, q, r$ alternatives are salient for the evaluation of each imperative, so that $\text{exh}$ crucially does not end up negating the possibility of the prejacent of one imperative in deriving the strong reading of the other.
Now we can see what makes the strong imperative in (16-d) different from both the weak imperative in (16-c) and the strong modal claim in (16-b): the strong imperative contains an additional ingredient, namely exh. In what follows, I will argue that the incompatibility of broad focus even with strong imperatives arises because of a conflict between the exclusive requirement of exh and the additive requirement of even.

To make this work, we will need to make two additional assumptions. The first, already implicit in the presentation so far, is that exh and even focus-associate with the same constituent in (16-d); this follows straightforwardly from our assumptions that even is focus-associating with the entire content of the imperative (i.e., the entire prejacent of the imperative operator) and that the strong reading is derived by having exh associate with the prejacent of the imperative operator. The second is that, when even and exh associate with the same constituent, they make use of the same substitutions for that constituent when building their alternatives. That is, if a particular substitution for a focused constituent is salient and relevant enough to be used by exh, it should be salient and relevant enough to be used by a co-associating even. This will remain a stipulation for now, but it will do good work for us; we will return to this choice in Section 4.3.5. With these assumptions in hand, we are ready to solve the puzzle.

**Strong imperatives with even**

First, we will derive the unacceptability of broad focus even in a strong imperative like Close your exam papers, even! in (5). We will assume that this sentence has the structure represented in (17-a), where even takes the strong imperative structure exh $\lozenge_{\text{imp}} p$ as its prejacent. We have seen in Section 4.3.2 how the meaning of the latter constituent is derived, when exh is supplied with the set of alternatives in (17-b).

The alternatives for even will be the set in (17-c), formed by making polarity-based substitutions for the focused constituent. The first alternative (the prejacent), where exh is applied to close your exam papers, will assert that the addressee is permitted to close their exam papers and is not permitted to not close their exam papers; this is equivalent to the addressee being required to close their exam papers. The second alternative, where exh is applied to the negation of close your exam papers, will assert that the addressee is
permitted to not close their exam papers and is not permitted to close their exam papers; this is equivalent to the addressee being required to not close their exam papers.

(17) #[Close your exam papers]$_F$, even!

a. LF: even$_C$$_1$ [exh$_{C}$$_2$ [◊$_{imp}$ [close your exam papers]$_{F1,F2}$]]

b. $C_2 = \{ [◊$_{imp}$ [close papers]],
\{ [◊$_{imp}$ [¬close papers]] \}

c. $C_1 = \{ [exh$_{C}$$_2$ [◊$_{imp}$ [close papers]$_{F2}$]],
\{ [exh$_{C}$$_2$ [◊$_{imp}$ [¬close papers]$_{F2}$]] \}

The scalar presupposition of even is in principle satisfiable; it will require that it is less likely or more noteworthy that the addressee be required to close their exam papers than that the addressee be required to not close their exam papers. However, the additive presupposition will require that, in addition to being required to close their exam papers, the addressees are required to not close their exam papers. This presupposition cannot be satisfied, because the non-prejacent alternative is incompatible with the prejacent. Thus, the infelicity of strong imperatives with broad focus even can be derived as a failure of the additive presupposition of even.

The acceptability of the strong imperative with even does not rely on the choice of polarity-based alternatives. Using $p$, $q$, $r$-based alternatives yields exactly the same configuration; this is demonstrated in (18), where put down your pens is substituted for close your exam papers to form the salient alternatives.

(18) Strong imperative $p$, even!

a. LF: even$_C$$_1$ [exh$_{C}$$_2$ [◊$_{imp}$ [$p$]$_{F1,F2}$]]

b. $C_2 = \{ [◊$_{imp}$ [close papers]],
\{ [◊$_{imp}$ [put down pens]] \}

c. $C_1 = \{ [exh$_{C}$$_2$ [◊$_{imp}$ [close papers]$_{F2}$]],
\{ [exh$_{C}$$_2$ [◊$_{imp}$ [put down pens]$_{F2}$]] \}
In Section 4.3.1, we saw that *even* is compatible with strong imperatives when it takes narrow focus. The difference between *even* taking broad and narrow focus is that in the former case *even* and *exh* co-associate with the same constituent, whereas in the latter case *even* and *exh* associate with different constituents; this means that the two operators will make use of different substitutions when building their alternatives. More concretely, suppose that example (7) has an LF like (19-a), where *exh* associates with the prejacent of the imperative operator and *even* associates with *smallest*. The prejacent of *even* will be the strong imperative structure *exh* $\Diamond \text{imp} \text{ report the smallest change}$; the alternatives for *even* will be formed by making relevant substitutions for *smallest*, the constituent with which it associates. An appropriate substitution in this context might be *largest*. The alternatives for *even* will therefore be the strong imperative structures $\text{exh} \Diamond \text{imp} \text{ report the smallest change}$ and $\text{exh} \Diamond \text{imp} \text{ report the smallest change}$, as in (19-c). In each of these alternatives, *exh* will operate as before, deriving the strong reading by asserting its prejacent and negating the polarity-based alternative. The meanings of these alternatives will be that the addressee is permitted to report the smallest change and not permitted to not report the smallest change (i.e., that the addressee is required to report the smallest change) and that the addressee is permitted to report the largest change and not permitted to not report the largest change (i.e., that the addressee is required to report the largest change).

(19) Report even the [smallest]$_F$ change in the patient’s condition. □$_{\text{imp}}$

a. LF: $\text{even}_{\text{C1}} \exp_{\text{C2}} [\Diamond \text{imp} \text{ report the smallest change}]_{F_1}$

b. $\text{C}_2 = \left\{ \begin{array}{l}
[\Diamond \text{imp} \text{ report the smallest}], \\
[\Diamond \text{imp} \text{ report the largest}]
\end{array} \right\}$

c. $\text{C}_1 = \left\{ \begin{array}{l}
[\exp_{\text{C2}} [\Diamond \text{imp} \text{ report the smallest}]], \\
[\exp_{\text{C2}} [\Diamond \text{imp} \text{ report the largest}]]
\end{array} \right\}$

\[
\begin{align*}
&= \left\{ \begin{array}{l}
[\Diamond \text{imp} \text{ report the smallest}] \land \neg[\Diamond \text{imp} \text{ report the smallest}], \\
[\Diamond \text{imp} \text{ report the largest}] \land \neg[\Diamond \text{imp} \text{ report the largest}]
\end{array} \right\}
\end{align*}
\]
The scalar presupposition of *even* requires that it is less likely or more noteworthy for the addressee to be required to report the smallest change in the patient’s condition than for the addressee to be required to report the largest change in the patient’s condition. The additive presupposition of *even* requires that, in addition to being required to report the smallest change in the patient’s condition, the addressee is required to report the largest change. Both of these presuppositions are satisfiable and compatible with plausible healthcare scenarios.

**Strong modals with even**

Next, we will derive the acceptability of broad focus *even* with strong non-imperative modals. Because the universal force of $\Box_{\text{mod}}$ comes from its lexical entry, there is no $\text{exh}$ in the structure to conflict with the additive component of *even*. When *even* associates with the prejacent of the modal as in (20-a), it will encounter alternatives where the prejacent of the modal is replaced with other propositions. In the exam context that we have been considering, let us take the proposition *you put down your pens* to be a plausible candidate, as in (20-b).

(20) You even have to [close your exam papers]$_f$.  
\[
\begin{align*}
\text{a. } & \text{LF: } \text{even}_c [\Box_{\text{mod}} \text{[close your exam papers]}_f] \\
\text{b. } & \text{C} = \left\{ [\Box_{\text{mod}} \text{[close papers]}],\ [\Box_{\text{mod}} \text{[put down pens]}] \right\}
\end{align*}
\]

The scalar presupposition of *even* will be satisfied if is less likely or more noteworthy that the addressee is required to close their exam papers than that the addressee is required to put down their pens. The additive presupposition of *even* will be satisfied if the addressee is required to put down their pens in addition to being required to close their exam papers. These presuppositions are satisfiable in the exam-writing context described in Section 4.3.1.

---

6This is an instance of the $p$, $q$, $r$ substitutions, discussed in footnote 5 above. Unlike the strong imperative meaning derived by asserting $\Diamond p \land \neg \Diamond \neg q$, $\Box_{\text{mod}}p$ is not equivalent to $\Diamond p \land \neg \Diamond \neg q$, and so the additive presupposition is satisfiable. The polarity-based substitutions $p$, $\neg p$ would not work here.
Weak imperatives with *even*

Finally, let us derive the acceptability of weak imperatives with broad focus *even*, like (6). These structures differ from their strong counterparts in that they do not contain *exh*; instead, they have the structure in (21-a). Here, the alternatives for *even* will be a set of weak imperatives with different contents, as in (21-b).

(21)  \[ \text{Close your exam papers}_F, \text{ even!} \]

a. LF: evenC \[ \hat{\text{imp}} \text{ [close your exam papers]}_F \]

b. \[ C = \left\{ \begin{array}{l} \hat{\text{imp}} \text{ [close exam papers],} \\ \hat{\text{imp}} \text{ [put down pens]} \end{array} \right\} \]

The scalar presupposition will require that it is less likely for the addressee to be allowed to close their exam papers than to be allowed to put down their pens. The additive presupposition will require that the addressee is allowed to put down their pens in addition to being allowed to close their exam papers. Both presuppositions are in principle satisfiable and compatible with the exam-writing context described in Section 4.3.1.

### 4.3.4 Extreme indifference

The presence of *even* in weak imperatives like (6) licenses an inference of extreme indifference, to the effect that the speaker does not care at all what the addressee does. That is, while both (22-a) and (22-b) convey that the speaker is indifferent to which course of action the students take, this effect is stronger in (22-b).

(22)  \begin{align*}
\text{Prof. Y is telling students who have been writing an exam that the test will no} \\
\text{longer count toward their grades and they are free to do whatever they like.}
\end{align*}

a. Put down your pens. Close your exam papers! \[ \hat{\text{imp}} \]

(... None of this matters.)

b. Put down your pens. Close your exam papers *even!* \[ \hat{\text{imp}} \]

(... None of this matters.)

---

7 Note that the polarity-based alternatives (i.e. \( \hat{\text{imp}} \text{ close papers}, \hat{\text{imp}} \text{ ¬close papers} \)) would also yield consistent results.
This inference falls out straightforwardly from the scalar presupposition of even. The analysis presented above predicts that the scalar presupposition of even in (22-b) requires that it is less likely that the addressee be permitted to close their exam papers than that they be permitted to engage in any of the other courses of action that are salient in the context. The likelihood of something being permitted is inversely proportional to the likelihood of its being forbidden; that is, what is least likely to be permitted is what is most likely to be forbidden. A speaker who signals that they permit even what is most likely to be forbidden is clearly not interested in constraining the addressee’s behaviour, not even in the most likely way. This allows us to conclude that the speaker does not care at all what the addressee does.

4.3.5 Consequences

The proposal made above relies on the presence of an existential modal (sometimes enriched by exh) in the structure of imperatives. Would it have been possible to capture the data if we had made different assumptions about the structure of imperatives?

The present puzzle could not be captured on an ambiguity version of the modal approach like the one proposed by Grosz (2011a), where the imperative operator is ambiguous between an existential modal and a universal modal. If strong imperatives contain a unitary □imp operator, strong imperatives with broad focus even should have a parallel structure to strong modal statements with broad focus even. In the absence of an exh to conflict with the additive presupposition of even, we would incorrectly predict that strong imperatives like (5) will be as felicitous as strong modal statements like (8). Minimal accounts fare no better; if the directive force of imperatives comes about pragmatically, so too must the distinction between strong and weak imperatives. This puzzle shows that even is sensitive to the distinction between strong and weak imperatives. On minimal accounts of imperatives, this distinction is made too late for even to detect it.

The puzzle of broad focus even in imperatives therefore provides a novel argument for the modal approach to imperatives, and for the underlyingly existential version of the modal approach in particular.
4.4 Free choice in imperatives

The puzzle explored in the preceding section can be solved if we assume that even has an additive component and imperatives contain an underlyingly existential modal operator. If we are to take this as an argument for the additive presupposition of even, we must convince ourselves that the assumption about imperatives is a safe one to make. In this section, we will explore a second puzzle about imperatives, and see that it too can be most easily solved on an existential modal semantics for imperatives. This puzzle concerns the distribution of free choice any in imperatives and modal statements. A notational variant of the solution that I propose has been independently argued for by Luka Crnič in an early draft of what became Crnič 2017. My presentation of the puzzle will mirror Crnič’s.

4.4.1 The puzzle

Free choice any has a restricted distribution; it is licensed under weak (existential) modals, but not usually under strong (universal) modals or in unembedded episodic sentences.

(23) a. You may read any book.
   b. #You must read any book.
   c. #Alex read any book yesterday.

There is an exception to this generalization: subtrigging, where the DP headed by any is modified (Dayal 1998). In the presence of subtrigging, free choice any is licensed in environments where it would otherwise be unacceptable, as shown in (24). When subtrigging occurs, any receives a characteristic universal interpretation.

(24) a. You must read any book that won a prize.
   ~ You must read every book that won a prize.
   b. Alex read any book that won a prize.
   ~ Alex read every book that won a prize.

---

The difference between the two accounts is that I use a single application of Bar-Lev & Fox’s (2017) Innocent Inclusion + Innocent Exclusion exh for deriving free choice, while Crnič uses two applications of Fox’s (2007) Innocent Exclusion exh. As far as I can tell, the two approaches are equivalent.
In light of these facts, the following data are puzzling: free choice any is licensed in imperatives, on both strong and weak readings (Giannakidou 2001, Aloni 2007, Kaufmann 2012, pace Haspelmath 1997).

(25)  
   a. A: May I read a book?  
      B: Sure! Read any book!  
   b. A: What do you command?  
      B: Read any book! (Then write a two-page summary.)⁹

That is, strong imperatives can host any, but strong modal statements cannot. Importantly, the acceptability of the strong imperative in (25-b) is not due to subtrigging: subtrigged strong imperatives, like subtrigged strong modal statements, yield a universal obligation (Dayal 1998). Whereas the command in (25-B) can be satisfied by reading a single book, the one in (26-B) can only be satisfied by reading every book that won a prize. This is demonstrated by the (near)¹⁰ equivalence of the two strong imperatives in (26).

(26)  
   A: What do you command?  
   B: Read any book that won a prize!  
   B': Read every book that won a prize!

If minimal accounts are to maintain that there is no imperative operator, they will need to come up with an explanation for the availability of free choice. Among modal theories that posit an ambiguity between weak and strong imperative operators, the challenge will be to explain why the strong imperative modal can license free choice any without subtrigging while strong modals cannot. In this section, I will propose that the distribution of free choice any can be captured quite straightforwardly if we assume that imperatives i) contain a modal, and ii) the underlying force of this modal is existential, with strong readings derived by exhaustification.

⁹Some speakers find the command use of any degraded in the absence of the continuation.

¹⁰The difference between them appears to be that subtrigged any fails to presuppose that there are (any) prize-winning books, while every, by virtue of requiring a non-empty restrictor, requires that there be prize-winning books in the salient domain.
4.4.2 Toolkit

Free choice is a strengthening effect that is available in modal environments. For example, the meaning of the structure in (27) predicted from the meaning of disjunction and the meaning of the existential modal is the disjunction of modalized propositions given in (27-a), but native speakers routinely infer the stronger conjunctive meaning in (27-b).

Similar facts hold for free choice *any*, as shown in (28), as existential quantification is equivalent to disjunction over the domain of the quantifier.

\[(27)\] You may read or sleep. \(\Diamond (\text{read } \lor \text{ sleep})\)

\[\begin{align*}
&\text{a. You may read or you may sleep.} \quad \Diamond (\text{read }) \lor \Diamond (\text{sleep}) \\
&\text{b. You may read and you may sleep.} \quad \Diamond (\text{read }) \land \Diamond (\text{sleep})
\end{align*}\]

\[(28)\] You may read any book. \(\Diamond (\exists b \in \text{D}_{[b_1,b_2]}: \text{you read read } b)\)

\[= \Diamond (\text{read b}_1 \lor \text{read b}_2)\]

\[\begin{align*}
&\text{a. You may read book 1 or you may read book 2.} \quad \Diamond (\text{read b}_1) \lor \Diamond (\text{read b}_2) \\
&\text{b. You may read book 1 and you may read book 2.} \quad \Diamond (\text{read b}_1) \land \Diamond (\text{read b}_2)
\end{align*}\]

Following Fox (2007), Chierchia (2013), and Bar-Lev & Fox (2017), I will assume that free choice effects are derived by exhaustification over alternatives where the domain of the embedded weak scalar element (disjunction or existential quantifier) is replaced by subsets of the original. This can be implemented with either two applications of Fox 2007’s innocent exclusion *exh* or one application of Bar-Lev and Fox’s 2017. Bar-Lev and Fox’s 2017 lexical entry for *exh*, given in (29), differs from Fox 2007’s in that it asserts not only the prejacent but all of the innocently includable (II) alternatives – that is, all members of the largest non-arbitrary set of alternatives that can be jointly asserted without contradicting the conjunction of the negation of the innocently excludable alternatives and the prejacent.

\[(29)\] \([\text{exh}]^{\text{g.ow}} = \lambda c_{<s,t>}. \lambda p_{<s,t>}. \forall r \in \text{II}(p,C) [r(w)] \land \forall q \in \text{IE}(p,C) [\neg q(w)]\]

To keep the LFs manageable, I will adopt Bar-Lev and Fox’s 2017 *exh*. To derive the free choice effect, this *exh* associates with the domain of *any* or *or* as in (30-a) and induces
subdomain alternatives, as in (42-b) for a toy world containing only two books (b1 and b2).\footnote{The bracketed alternative is the counterpart of the alternative derived by replacing disjunction with conjunction in free choice disjunction. It can be thought of as the result of \textit{exh} associating with both the quantifier and its domain. Note that this alternative may be pruned; if it is not, we will derive a prohibition on reading both books.}

\begin{align*}
(30) \quad \text{You may read any book.} & \quad / \quad \text{You may read } b1 \text{ or } b2. \quad \hat{\Diamond}_{\text{mod}} \\
\quad \text{a.} & \quad LF = [\text{exh}_{C1} [\hat{\Diamond} [\text{you read } a\{b1,b2\}F1,F2 \text{ book}]]] \\
& \{ \hat{\Diamond} [\text{you read } a\{b1,b2\} \text{ book}], \hat{\Diamond} [\text{you read } a\{b1\} \text{ book}], \hat{\Diamond} [\text{you read } a\{b2\} \text{ book}], (\hat{\Diamond} [\text{you read every}\{b1,b2\} \text{ book}]) \}
\end{align*}

In this case, only the strongest alternative, shown in brackets in (30), is innocently excludable; all others are innocently includable. This means that \textit{exh} will negate the former and assert the latter, as in (31).

\begin{align*}
(31) \quad \text{exh}(C1)(\hat{\Diamond} \text{ you read } a\{b1,b2\} \text{ book}) & = 1 \text{ iff } \hat{\Diamond} \text{ you read } a\{b1,b2\} \text{ book} \\
& \quad \land \hat{\Diamond} \text{ you read } a\{b1\} \text{ book} \\
& \quad \land \hat{\Diamond} \text{ you read } a\{b2\} \text{ book} \\
& \quad (\land \neg \hat{\Diamond} \text{ you read every}\{b1,b2\} \text{ book})
\end{align*}

The distribution of \textit{any} is restricted in a way that is independent of its free choice status: sentences with \textit{any} must make a stronger contribution than sentences with a plain indefinite such as \textit{a} (Kadmon & Landman 1993, Lahiri 1998). Following Chierchia (2013), Crnič (2017), and others, I will implement this by having a covert \textit{even}-like operator associate with \textit{any} and act on its subdomain alternatives. I will assume that this covert operator (represented as \textit{EVEN} to distinguish it from the overt \textit{even} we have been discussing) is like English \textit{even} in having a scalar presupposition requires that its prejacent less likely, more noteworthy, or otherwise stronger than its its alternatives;\footnote{It may be necessary to restrict the flavour of \textit{even}'s scale to entailment; see discussion in Crnič 2017.} this will ensure that free choice \textit{any} is only licensed when its free choice inference strengthens the meaning of the
sentence that contains it. I will remain agnostic about whether EVEN also carries an additive presupposition, as even does.

To see how this correctly derives the distribution of free choice any, let us work through three examples.\(^\text{13}\) Firstly, let us confirm that this machinery derives the acceptability of *You may read any book*. If we assign this sentence a structure as in (32-a), the free choice effect will be derived as before using the alternatives in (32-b). **EVEN** will encounter the alternatives in (32-c).

\[(32)\quad \text{You may read any book.} \quad \hat{\diamond}_{\text{mod}}\]

\[
\begin{align*}
\text{a.} & \quad \text{LF} = \text{EVEN}_{C_2} [\text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_1,b_2]}F_1,F_2 \text{ book}]] \\
& \quad \begin{aligned}
\hat{\diamond} \text{ you read } a_{[b_1,b_2]} \text{ book}, \\
\hat{\diamond} \text{ you read } a_{[b_1]} \text{ book}, \\
\hat{\diamond} \text{ you read } a_{[b_2]} \text{ book}, \\
(\hat{\diamond} \text{ you read every } [b_1,b_2] \text{ book})
\end{aligned} \\
& \quad \begin{aligned}
\text{IE} & \quad \text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_1,b_2]}F_1 \text{ book}], \\
\text{C}_1 & = \begin{aligned}
\text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_1]}F_1 \text{ book}], \\
\text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_2]}F_1 \text{ book}]
\end{aligned}
\end{aligned} \\
\text{b.} & \quad \text{C}_1 = \begin{aligned}
\text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_1,b_2]}F_1 \text{ book}], \\
\text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_1]}F_1 \text{ book}], \\
\text{exh}_{C_1} [\hat{\diamond} \text{you read } a_{[b_2]}F_1 \text{ book}]
\end{aligned}
\end{aligned}
\]

Let us assume that i) within each of the alternatives in (32-c) the value of **C** \(_1\) is calculated independently, and ii) the alternatives that **exh** is interested are stipulated to be subdomain alternatives. Since the domain of the existential quantifier in the prejacent of **exh** in the second and third alternatives in (32-c) is a singleton set containing just one book, there are no subdomain alternatives for **exh** to consider. All it can do, then, is assert the prejacent, which is innocently includable. The scalar presupposition of **even** will thus be comparing the following meanings.\(^\text{14}\)

\[
(33) \quad \text{C}_2 = \begin{aligned}
\hat{\diamond} \text{ you read } a_{[b_1,b_2]} \text{ book} \land \hat{\diamond} \text{ you read } a_{[b_1]} \text{ book} \\
\land \hat{\diamond} \text{ you read } a_{[b_2]} \text{ book}, \\
\hat{\diamond} \text{ you read } a_{[b_1]} \text{ book}, \\
\hat{\diamond} \text{ you read } a_{[b_2]} \text{ book}
\end{aligned}
\]

\(^{13}\)The presentation here draws on Crnič (2017).

\(^{14}\)I omit the contribution of the conjunctive alternative in the prejacent for the sake of space.
The prejacent of \textit{EVEN}, which is equivalent to the first alternative in (33), entails both of the other alternatives. Thus, the scalar presupposition of \textit{EVEN} is satisfied, and \textit{any} is predicted to be licensed.

Next, let us consider the unacceptability of \#\textit{You must read any book}, where \textit{any} is embedded under a strong modal.

(34) \#\textit{You must read any book}. \hspace{1cm} \square_{\text{mod}}

\begin{enumerate}
\item \text{LF} = \text{EVEN}_{C_2} [\text{exh}_{C_1} [\square [\text{you read } a_{\{b_1,b_2\}F_1,F_2 \text{ book}}]]]
\begin{align*}
\square [\text{you read } a_{\{b_1,b_2\} \text{ book}}], & \quad \text{II} \\
\square [\text{you read } a_{\{b_1\} \text{ book}}], & \quad \text{IE} \\
\square [\text{you read } a_{\{b_2\} \text{ book}}], & \quad \text{IE} \\
(\square [\text{you read } \text{ every}_{\{b_1,b_2\} \text{ book}}]) & \quad \text{IE}
\end{align*}
\item \text{C}_1 =
\begin{align*}
\text{exh}_{C_1} [\square [\text{you read } a_{\{b_1,b_2\}F_1 \text{ book}}]], & \quad \text{IE}
\end{align*}
\item \text{C}_2 =
\begin{align*}
\text{exh}_{C_1} [\square [\text{you read } a_{\{b_1\}F_1 \text{ book}}]],
\text{exh}_{C_1} [\square [\text{you read } a_{\{b_2\}F_1 \text{ book}}]]
\end{align*}
\end{enumerate}

It is perfectly consistent for one to be required to read a book without being required to read any particular book; this is, after all, what it means to have free choice. All of the non-prejacent alternatives in (34-b) are therefore innocently excludable, and hence negated by \textit{exh} as in (35).

(35) \text{exh} (C_1) (\square \text{ you read } a_{\{b_1,b_2\} \text{ book}}) = 1 \text{ iff } \square \text{ you read } a_{\{b_1,b_2\} \text{ book}}
\begin{align*}
& \land \neg \square \text{ you read } a_{\{b_1\} \text{ book}} \\
& \land \neg \square \text{ you read } a_{\{b_2\} \text{ book}} \\
& (\land \neg \square \text{ you read } \text{ every}_{\{b_1,b_2\} \text{ book}})
\end{align*}

The alternatives that \textit{EVEN} applies to in (34-c) will thus have the meanings in (36).
The prejacent of \textit{EVEN}, corresponding to the first alternative in (36), is not in an entailment relation with the other alternatives. The scalar presupposition is therefore not guaranteed to be satisfied, and would in fact require a peculiar context to be satisfied.\footnote{The relevant context would be one where it is less likely that the addressee is required to read some book and given free choice as to which one than that the addressee is required to read book 1, and likewise it is less likely that the addressee is required to read some book and given free choice as to which one than that the addressee is required to read book 2. If \textit{EVEN}'s scalar presupposition was restricted to an entailment-based scale, this presupposition would simply be unsatisfied here.} Furthermore, if this covert \textit{EVEN} is like the overt \textit{even} in having an additive presupposition, this presupposition will not be satisfiable, because the prejacent entails the negation of both non-prejacent alternatives. We therefore predict \#\textit{You read any book (yesterday)} to be infelicitous, as desired.

Finally, let us see how this approach derives the unacceptability of unembedded free choice \textit{any}, as in \#\textit{Mary read any book}.

(37) \#\textit{You read any book (yesterday)}

\begin{itemize}
\item[(a)]\textit{LF} = \textit{EVEN}_{C2} [\textit{exh}_{C1} [\textit{you read } a_{[b1,b2]} \text{ book}]]
\begin{itemize}
\item[\text{II}] [\textit{you read } a_{[b1,b2]} \text{ book}],
\item[\text{IE}] [\textit{you read } a_{[b1]} \text{ book}],
\item[\text{IE}] [\textit{you read } a_{[b2]} \text{ book}],
\item[\text{IE}] [\textit{you read every }_{[b1,b2]} \text{ book}]]
\end{itemize}
\item[(b)]\textit{C1} = \begin{itemize}
\item[\text{IE}] [\textit{exh}_{C1} [\textit{you read } a_{[b1,b2]} F_1 \text{ book}]],
\item[\text{IE}] [\textit{exh}_{C1} [\textit{you read } a_{[b1]} F_1 \text{ book}]],
\item[\text{IE}] [\textit{exh}_{C1} [\textit{you read } a_{[b2]} F_1 \text{ book}]]
\end{itemize}
\end{itemize}

Here, in the absence of a modal, the alternatives for \textit{exh} are simply quantificational statements ranging over different domains of books. The prejacent will be innocently includable and the conjunctive alternative will be innocently excludable, as before, but now the
alternatives where the quantifier ranges over singleton books are neither includable nor excludable. They will therefore be neither negated nor asserted by \( \text{exh} \), as shown in (38).

\[
\text{exh}(C_1)(\text{you read } a_{\{b_1,b_2\} \text{ book}}) = 1 \text{ iff you read } a_{\{b_1,b_2\} \text{ book}} \\
\quad (\land \neg \text{you read } \text{every}_{\{b_1,b_2\} \text{ book}})
\]

The alternatives that \textit{EVEN} considers will have meanings equivalent to the following:

\[
C_2 = \begin{cases} 
\text{you read } a_{\{b_1,b_2\} \text{ book }} (\land \neg \text{you read } \text{every}_{\{b_1,b_2\} \text{ book}}) \\
\text{you read } a_{\{b_1\} \text{ book}}, \\
\text{you read } a_{\{b_2\} \text{ book}}
\end{cases}
\]

Here, the prejacent (which corresponds to the first alternative in (39)), is entailed by the other alternatives. Thus, the scalar presupposition of \textit{EVEN} is not satisfied, and so we correctly predict this sentence to be unacceptable.

We now have a working machinery for free choice \textit{any} in hand. This machinery, it turns out, offers us a new way achieving the strengthening of the imperative modal operator.

Bassi & Bar-Lev (2016) propose that the modal of bare conditionals is underlyingly existential in force, but strengthened in upward-entailing environments by \( \text{exh} \) exhaustifying over subdomains of the modal in a manner that is formally no different from free choice strengthening.\(^{16}\) When applied to the imperative modal, this idea proceeds as follows.

\[
\text{(40) } \text{Run!} \quad \Box_{\text{imp}}
\]

\( a. \quad \text{LF} = \text{exh}_{C_1} [\Diamond_{\{w_1,w_2\}F_1 \text{ [you run]}]} \)

\[
\begin{cases} 
\Diamond_{\{w_1,w_2\} \text{ [you run]}}, \\
\Diamond_{\{w_1\} \text{ [you run]}}, \\
\Diamond_{\{w_2\} \text{ [you run]}}
\end{cases} \\
\text{II} \\
\text{II} \\
\text{II}
\]

\( b. \quad C_1 = \begin{cases} 
\Diamond_{\{w_1\} \text{ [you run]}}, \\
\Diamond_{\{w_2\} \text{ [you run]}}
\end{cases} \\
\text{II} \\
\text{II}
\]

Here, all of the alternatives for \( \text{exh} \) are innocently includable; there is no innocently excludable alternative, and all of the alternatives are jointly assertable. They are therefore all

\(^{16}\) They note that the availability of this strengthening in unembedded environments is made possible by the absence of a universal dual for the modal that could be used to generate a scalar implicature (i.e., that could yield an innocently excludable alternative).
asserted by \textit{exh}, as in (41).

(41) \hspace{1cm} \text{exh}(C_1)(\Diamond_{\{w_1,w_2\}} \text{ you run}) = 1 \text{ iff } \Diamond_{\{w_1,w_2\}} \text{ you run} \\
\hspace{2cm} \land \Diamond_{\{w_1\}} \text{ you run} \\
\hspace{2cm} \land \Diamond_{\{w_2\}} \text{ you run} \\
\hspace{2cm} = 1 \text{ iff } \Box_{\{w_1,w_2\}} [\text{ you run}]

As Bassi and Bar-Lev observe, asserting that there is a world in each of the singleton sets \{w_1\} and \{w_2\} where you run is equivalent to asserting that all of the worlds in the larger domain \{w_1,w_2\} are worlds where you run. Thus, the existential modal claim is converted into a universal one.

4.4.3 Proposal

We have already seen that the off-the-shelf analysis of free choice \textit{any} outlined in the previous subsection correctly predicts that it is licensed under weak modals but not under strong modals or in positive episodic sentences. Since weak imperatives are structurally identical to weak modal statements on the existential modal semantics that we have been assuming for imperatives, the acceptability of free choice \textit{any} falls out of this analysis for free ((42), cf. (32)).

(42) \hspace{1cm} \text{Read any book!} \\
\hspace{2cm} \Diamond_{\text{imp}}

a. \begin{align*}
\text{LF} &= \text{even}_{C_2} [\text{exh}_{C_1} [\Diamond \text{ you read } a_{\{b_1,b_2\}F_1,F_2 \text{ book}}]] \\
\phi &= \{ \Diamond \text{ you read } a_{\{b_1,b_2\} \text{ book}}, \ldots \}
\end{align*}

b. \begin{align*}
C_1 &= \{ \Diamond \text{ you read } a_{\{b_1\} \text{ book}}, \ldots \} \\
\phi &= \{ \Diamond \text{ you read } a_{\{b_2\} \text{ book}}, \ldots \} \\
\phi &= \{ \Diamond \text{ you read every }_{\{b_1,b_2\} \text{ book}} \} \\
\phi &= \text{exh}_{C_1} [\Diamond \text{ you read } a_{\{b_1,b_2\}F_1 \text{ book}}],
\end{align*}

c. \begin{align*}
C_2 &= \{ \Diamond \text{ you read } a_{\{b_1\}F_1 \text{ book}}, \ldots \} \\
\phi &= \{ \Diamond \text{ you read } a_{\{b_2\}F_1 \text{ book}}, \ldots \}
\end{align*}

(43) \hspace{1cm} \text{exh}(C_1)(\Diamond \text{ you read } a_{\{b_1,b_2\} \text{ book}}) = 1 \text{ iff }

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\(\Diamond \text{you read } a_{[b_1,b_2]} \text{ book} \land \Diamond \text{you read } a_{[b_1]} \text{ book} \land \Diamond \text{you read } a_{[b_2]} \text{ book} \land \Diamond \text{you read every}_{[b_1,b_2]} \text{ book})\)

To derive the acceptability of any in strong imperatives, all that is needed is to assume that the \textit{exh} that strengthens the existential imperative modal is located above the \textit{exh} that derives free choice and the covert \textit{EVEN} that checks any’s licensing condition, as in (44-a). On this view, strong imperatives with \textit{any} contain the same structure as weak imperatives and weak modal statements with \textit{any}, underlined below.

(44) Read any book! \(\Box_{\text{imp}}\)

\(\text{a. } \text{LF} = \text{exh}_{C_3} [\text{EVEN}_{C_2} [\text{exh}_{C_1} [\Diamond_{[w_1,w_2]} F_3 \text{ you read } a_{[b_1,b_2]} F_1,F_2 \text{ book}]]]]\)

\(\text{\{}\text{EVEN}_{C_2} [\text{exh}_{C_1} [\Diamond_{[w_1,w_2]} \text{ you read } a_{[b_1,b_2]} F_1,F_2 \text{ book}]]], \text{II}\)

\(\text{b. } C_3 = \text{\{}\text{EVEN}_{C_2} [\text{exh}_{C_1} [\Diamond_{[w_1]} \text{ you read } a_{[b_1,b_2]} F_1,F_2 \text{ book}]]], \text{II}\)

\(\text{\{}\text{EVEN}_{C_2} [\text{exh}_{C_1} [\Diamond_{[w_2]} \text{ you read } a_{[b_1,b_2]} F_1,F_2 \text{ book}]]], \text{II}\)\)

Everything within the underlined structure proceeds as in (42). The alternatives for the modal-strengthening \textit{exh} will be weak imperatives with \textit{any} ranging over different sets of worlds. All of these alternatives will be innocently includable,\(^{17}\) and so the modal is strengthened.

(45) \(\text{exh}(C_3)(\text{EVEN}_{C_2} [\text{exh}_{C_1} [\Diamond_{[w_1,w_2]} F_3 \text{ you read } a_{[b_1,b_2]} F_1,F_2 \text{ book}]]]) = 1 \text{ iff }\)

\(\Diamond_{[w_1,w_2]} \text{ you read } a_{[b_1,b_2]} \text{ book} \land \Diamond_{[w_1,w_2]} \text{ you read } a_{[b_1]} \text{ book}\)

\(\land \Diamond_{[w_1,w_2]} \text{ you read } a_{[b_2]} \text{ book} \land \Diamond_{[w_1]} \text{ you read } a_{[b_1,b_2]} \text{ book}\)

\(\land \Diamond_{[w_2]} \text{ you read } a_{[b_1,b_2]} \text{ book}\)

This proposal exploits the structural similarities between weak and strong imperatives on the existential modal account. On this account, the difference between weak and strong imperatives (unlike the difference between weak and strong non-imperative modals) is crucially derived too late for the \textit{EVEN} that checks the licensing conditions of \textit{any} to be able

\(^{17}\)There may be a problem with the non-prejacent alternatives here. The claim made by \(\Diamond_{[w_1]} (p)\) is the same as that made by \(\Box_{[w_1]} (p)\), and indeed by \(p(w_1)\). One possible explanation could be that the presuppositions of \textit{EVEN} do not need to be satisfied within focus alternatives – that is, that \textit{any}'s licensing requirements only need to be met in the prejacent.
to be sensitive to it.

### 4.4.4 Consequences

We have seen that the distribution of *any* in imperatives can be accounted for with existing machinery if we assume that imperatives contain an underlyingly existential modal. Could we have derived these data if we had made different assumptions about imperatives?

On the ambiguity version of the modal account, the difference between strong modals and strong imperatives with *any* is entirely unexpected. For minimal accounts, the challenge is to explain why free choice *any* is licensed in imperatives at all. Outside of imperatives, *any* is only licensed when *exh* associates with the domain of *any* across an appropriate embedding operator; if there is no such operator in the syntax, we wrongly predict that all imperatives with free choice *any* will be infelicitous.

Thus, the licensing of free choice *any* in both weak and strong imperatives forms an argument for the existential modal account of imperatives, where imperatives of both strengths share a common core.

### 4.5 A note on strengthening

In this chapter, we have seen two different mechanisms for strengthening the existential imperative modal. The goal of this section is to determine whether both mechanisms are necessary or whether the data discussed here can be handled with a single mechanism.

The solution to the puzzle about *even* in imperatives relied on *even* and *exh* co-associating with the same material, with no intervening operator to prevent a clash between the additive requirement of *even* and the exclusive import of *exh*. Since *even* associates with the entire prejacent of the imperative operator, Oikonomou's (2016) machinery, which strengthened the imperative operator by having *exh* associate with the entire prejacent of the imperative operator, was a perfect fit. But would it have been possible to capture the facts equally well if we had instead assumed the strengthening mechanism proposed by Bassi & Bar-Lev (2016), where *exh* associates with the domain of the imperative operator? The answer is yes, provided that we maintain the crucial co-association of *even* and *exh* that led to un-
acceptability for strong imperatives with *even*. That is, we can get the same result as we did with Oikonomou’s (2016) machinery using Bassi and Bar-Lev’s (2016) machinery as long as, in addition to associating with the domain of the imperative operator, *exh* associates with the prejacent of the imperative operator. This results in the structures and sets of alternatives in (46) and (48), for polarity-based and *p, q, r*-substitutions, respectively.

In each case, the alternatives for *exh* that differ from the prejacent only in the domain of the imperative operator are all innocently includable, and those that differ from the prejacent in the prejacent of the imperative operator are innocently excludable. *Exh* therefore negates these alternatives, as shown in (47-a) and (49-a). *Even* then induces alternatives where *exh* applies to the same structure, except that the prejacent of the modal varies. The truth conditions of the prejacent of *even* will be as in (47-a) and (49-a), but the meaning of the non-prejacent alternative in *C*₂ will be as in (47-b) and (49-b); the two alternatives are incompatible with each other, and so the additive presupposition of *even* will be unsatisfiable, just as in the original analysis.

(46)  
*Close your exam papers, even!*  

\[ \square_{\text{imp}} \]

a. LF: even\textsubscript{C₁} \[ exh\textsubscript{C₁} (\diamond_{w₁,w₂} [close papers], F₁ [close papers] \_F₁,F₂) ]

\[ \left\{ \begin{array}{l}
\diamond_{w₁,w₂} [close papers], \\
\diamond_{w₁} [close papers], \\
\diamond_{w₂} [close papers], \\
\diamond_{w₁,w₂} [\neg close papers], \\
\diamond_{w₁} [\neg close papers], \\
\diamond_{w₂} [\neg close papers] \\
\end{array} \right. \]

b. \[ C₁ = \left\{ \begin{array}{l}
exh\textsubscript{C₁} (\diamond_{w₁,w₂} [close papers], F₁ [close papers] \_F₁), \\
exh\textsubscript{C₁} (\diamond_{w₁,w₂} [\neg close papers] \_F₁) \\
\end{array} \right. \]

c. \[ C₂ = \left\{ \begin{array}{l}
exh\textsubscript{C₁} (\diamond_{w₁,w₂} [close papers], F₁ [close papers] \_F₁), \\
exh\textsubscript{C₁} (\diamond_{w₁,w₂} [\neg close papers] \_F₁) \\
\end{array} \right. \]

(47) a. \[ \text{exh}(C₁)(\diamond_{w₁,w₂} [close papers]) = 1 \text{ iff } \diamond_{w₁,w₂} [close papers] \land \diamond_{w₁} [close papers] \land \diamond_{w₂} [close papers] \land \neg \diamond_{w₁,w₂} [\neg close papers] \land \neg \diamond_{w₁} [\neg close papers] \land \neg \diamond_{w₂} [\neg close papers] \]

\[ = 1 \text{ iff } \square_{w₁,w₂} [close papers] \land \neg \diamond_{w₁,w₂} [\neg close papers] \]

b. \[ \text{exh}(C₁)(\diamond_{w₁,w₂} [\neg close papers]) = 1 \text{ iff } \diamond_{w₁,w₂} [\neg close papers] \land \diamond_{w₁} \]

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(48) Close your exam papers, even!

\[ \neg \text{close papers} \land \Diamond_{\{w_2\}} [\neg \text{close papers}] \land \neg \Diamond_{\{w_1,w_2\}} [\text{close papers}] \land \neg \Diamond_{\{w_1\}} [\text{close papers}] \land \neg \Diamond_{\{w_2\}} [\text{close papers}] \]

\[ = 1 \text{ iff } \square_{\{w_1,w_2\}} [\neg \text{close papers}] \land \neg \Diamond_{\{w_1,w_2\}} [\text{close papers}] \]

What of the free choice puzzle; could it be handled with Oikonomou’s (2016) machinery? The answer is yes, as long as they key assumption that the \textit{exh} that strengthens the imperative operator is located above the \textit{exh} that derives free choice and the \textit{even} that checks \textit{any}’s licensing conditions. On this view, the structure of a strong imperative with \textit{any} would have the LF in (50-a). The derivation of free choice and the licensing of \textit{any} will proceed exactly as in the original account. The only difference is that \textit{exh} will associate with the prejacent of the imperative operator rather than its domain. This will result in the
set of alternatives in (50-b).18

(50)   Read any book!

  a. \( \text{exh}_{C_3} [\text{EVEN}_{C_2} [\text{exh}_{C_1} [\diamond a_{[b_1,b_2]}F_1,F_2 \text{ book}]]] \)

  b. \( C_3 = \{ \begin{align*}
\text{EVEN}_{C_2} [\text{exh}_{C_1} [\diamond \{ \text{read a}_{[b_1,b_2]}F_1,F_2 \text{ book} \}]], \\
\text{EVEN}_{C_2} [\text{exh}_{C_1} [\diamond \{ \neg \text{read a}_{[b_1,b_2]}F_1,F_2 \text{ book} \}]]
\end{align*} \}

The non-prejacent alternative will be innocently excludable, and so the imperative operator will be strengthened. As in the original account, this strengthening happens too late for the licensing of \textit{any} to be sensitive to it.

It thus appears that both methods for strengthening the underlyingly weak imperative modal operator can capture all of the data explored in this section. If a choice is to be made between them, it will not be made on the basis of the puzzles discussed here.

### 4.6 Consequences for theories of imperatives

The two puzzles presented in this chapter are cases where the modal and minimal accounts of imperatives make different predictions. As such, they bear on the question of which of these theories best accounts for the available data. In this final subsection, let us therefore take stock of what data there are on each side of the debate.

In the modal view’s corner are three data points that come out in its favour. Two were discussed in this chapter: the distribution of broad focus \textit{even} and free choice \textit{any} in imperatives are both readily captured on (underlyingly existential versions of) the modal view, and present a challenge to the minimal view. In addition to these points, there is Oikonomou’s (2016) observation that, in Greek, imperatives containing \textit{only} receive different interpretations depending on whether they have undergone focus movement. Her examples are modeled on data presented by Haida & Repp (2012), who observe an identical interpretive ambiguity for English imperatives with \textit{only} (but without focus movement).

\[18\] I show only polarity-based substitutions here because this strong imperative was presented in a virtually out-of-the-blue context, and out-of-the-blue contexts are precisely those where Oikonomou assumes polarity-based alternatives will be used.
(51) Context: You’ve asked me to paint those tables but I’m really tired and don’t feel like doing something really useful today.

a. Vapse [mono to strogilo trapezi].
   paint only the round table
   ‘Only paint the round table.’
   ◊ > only

b. ![Mono to strogilo trapezi] vapse.
   only the round table paint
   ‘Only paint the round table.’
   #only > ◊

(Oikonomou 2016: 1050-1051)

(52) Context: Oh, I feel like doing something really useful today. I think I’ll paint the tables over there.

a. #Vapse [mono to strogilo trapezi].
   paint only the round table
   ‘Only paint the round table.’
   #◊ > only

b. ![Mono to strogilo trapezi] vapse.
   only the round table paint
   ‘Only paint the round table.’
   only > ◊

(Oikonomou 2016: 1050-1051)

Crucially, Oikonomou (2016) argues that neither of the readings that is available for these imperatives with *only* could be derived by having *only* scope above or below a universal modal operator. The burden is on the minimal view to explain why focus movement with *only* has this effect if there is no modal operator in the structure of imperatives.

In the minimal view’s corner is a single data point raised by von Fintel & Iatridou (2017): Imperative-and-Declarative constructions (IaDs). These are, as the name suggests, conjunctions of an imperative and a declarative, exemplified in (53).19

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19 As von Fintel & Iatridou (2017) note, while it is tempting to think that the first conjunct is some other kind of reduced clause, it has been known since Jespersen (1924) (though often forgotten) that evidence from languages with richer morphological marking shows that the first conjunct in this construction really is an imperative.
(53)  

a. Study hard and you’ll pass.
    \[\sim\] If you study hard, you’ll pass.

b. Skip class and you’ll fail.
    \[\sim\] If you skip class, you’ll fail.

von Fintel & Iatridou (2017) argue that IaDs are a form of conditional conjunction, based on the fact that languages that lack conditional conjunctions also lack IaDs. Conditional conjunctions, exemplified in (54), are conjunctions that lead to a conditional interpretation, where the first clause acts as the antecedent and the second conjunct as the consequent (Culicover & Jackendoff 1997). The first conjunct may be quite minimal, as in (54-c).

(54)  

a. Big Louie sees you with the loot and he puts out a contract on you.
    \[\sim\] If Big Louie sees you with the loot, he’ll put out a contract on you.

b. You drink another can of beer and I’m leaving.
    \[\sim\] If you drink another can of beer, I’m leaving.

c. One more can of beer and I’m leaving.
    \[\sim\] If you have one more can of beer, I’m leaving, \textit{i.a.}
    (Culicover & Jackendoff 1997: 196-198)

von Fintel & Iatridou (2017) argue that IaDs pose a problem for the modal view of imperatives because the alleged covert modal in the first conjunct of an IaD conditional conjunction does not behave like overt modals in the first conjunct of non-IaD conditional conjunctions. More particularly, they observe that overt modals in the first conjunct of a conditional conjunction are generally interpreted within the antecedent of the ensuing conditional meaning; they neither disappear nor are interpreted as the modal of the conditional.

(55)  

a. John has to take out the garbage and he complains endlessly.

b. \[\neq\] If John takes out the garbage, he complains endlessly.

c. \[=\] If John has to take out the garbage, he complains endlessly.
    (von Fintel & Iatridou 2017: 308)

(56)  

a. You should forget to call your mother and you (will) apologize.
b. ≠ If you forget to call your mother, you should apologize.
c. = If you should forget to call your mother, you will apologize.

(von Fintel & Iatridou 2017: 308)

The challenge for the modal view of imperatives is to explain why the modal of imperatives, and only the modal of imperatives, seems to disappear in the first conjunct of conditional conjunctions.

Of course, the differing behaviour of overt modals and the putative imperative modal in conditional conjunctions is only an argument against the modal view of imperatives if we accept the premise that the imperative modal operator can be safely compared to overt modals. This is a good starting point, but it should be noted that there are at least three ways in which we know the imperative operator differs from overt modals. It is covert, it carries presuppositions restricting it to performative uses, and (on the existential modal view assumed here) it lacks a universal dual, which makes strengthening possible. 20

It should also be noted that the cases where overt modals in conditional conjunctions behave like alleged imperative modal are precisely those where the modal is in the scope of a focus-sensitive operator (Schwager 2006). This is precisely the configuration in which the alleged imperative modal finds itself when it is strengthened by exh.

(57) You only have to LOOK at him and he shies away in fear.

(von Fintel & Iatridou 2017: 316)

(58) You can even call him at MIDNIGHT and he won’t get angry.

(Schwager 2006: 267)

Ultimately, we need a theory that can explain scope ambiguities with only/mono, the distribution of even and any, and the behaviour of IaDs. To my knowledge, there is no theory currently on the market that can do it all, but knowing which pieces of data are challenges for existing proposals will hopefully help us to build one.

20 This is a point of similarity between the covert modal of imperatives and the covert modal of bare conditionals, on the analysis of the latter presented by Bassi & Bar-Lev (2016).
4.7 Conclusion

In this chapter, we have seen that assuming that \textit{even} is always additive, in the sense that it is always incompatible with mutually exclusive alternatives, can help us to understand an otherwise puzzling contrast in the acceptability of imperatives with \textit{even}.

This chapter can also be seen as providing an argument for an existential modal semantics for imperatives. This argument came in two complementary parts. The argument from \textit{even} showed that the difference between weak and strong imperatives needs to be accessible to other operators in the structure (in this case, \textit{even} and its additive presupposition). The argument from \textit{any} showed that the difference between strong imperatives and strong modals needs to be accessible to other operators in the structure (namely \textit{any} and the operators that govern its distribution) without the distinction between strong and weak imperatives (and weak modals) being likewise visible. The existential modal semantics for imperatives provides exactly as much flexibility as is required to derive these facts; strong imperatives are unlike both weak imperatives and weak and strong modals in that they contain \textit{exh}, and strong imperatives are like weak imperatives and modals but unlike strong modals (and non-modal statements) in that they contain an existential quantifier.

In closing, I would like to outline three questions left open by the discussion above that would benefit from further examination. Firstly, Section 4.3 observed a curious contrast between the availability of broad focus for additive items \textit{even} and \textit{also} in strong imperatives. This was attributed to a stipulated requirement that \textit{even} (but not \textit{also}) make use of the same substitutions as \textit{exh} when these two focus-sensitive operators co-associate with the same constituent; this demands an explanation, but none has been provided. One obvious difference between \textit{also} and \textit{even} is that only the latter has a scalar presupposition. Could there be some reason that scalar presuppositions share some affinity with \textit{exh} that additive presuppositions do not?\footnote{It was noted that the \textit{even/also} contrast could equally well be attributed to a difference in availability of wide scope for these operators; on this view, there could perhaps be a connection to the availability of discourse-level uses of these operators. But note that sentence-initial \textit{also} is quite comfortable with discourse uses (paraphrasable as \textit{Here's another thing that's true and relevant}).} Secondly, the account presented in 4.3 has focused on English, where the dedicated sentence type for giving directives can have both strong and weak readings. However, languages like Hebrew and Slovenian, have multiple sentence types...
can have directive force, and some of these forms allow only strong readings. The analysis should be extended to these cases, with special consideration given to what alternatives come into play for the cases under discussion in these languages. Finally, the accounts presented in 4.3 both followed Oikonomou (2016) in appealing to a covert exh operator to strengthen the underlyingly existential imperative modal operator in cases where modals receive strong interpretations; this situated imperatives as one of a growing number of apparently universal expressions – including the modal of bare conditionals (Bassi & Bar-Lev 2016), want (Staniszewski to appear), and the Hebrew quantifier kol Bar-Lev & Margulis (2014) – that have been analyzed as strengthened existentials. However, imperatives differ from these other expressions in that, although strong readings are the default for imperatives uttered out-of-the blue, weak readings are nevertheless possible. That is, exh does not obligatorily strengthen the imperative operator in upward-entailing environments, whereas it does obligatorily strengthen the modal of bare conditionals, want, and kol. We need a

\[22\text{ A preliminary examination of Hebrew suggests that both the future imperative form, which is described as having strong and weak readings, and the infinitive, which is described as having only strong readings, pattern like English imperatives of the corresponding strength with respect to the even puzzle presented in Section 4.3. The relevant data are in (i).} \]

(i) Context: Prof. X is invigilating an exam and orders the students to stop writing.

a. Simu et ha-etim ba-cad. Sgeru (gam/#afilu) et maxbarot ha-bxina!
   ‘Put your pens aside. Close your exam papers also/#even!’

b. ok, axshav lasim et ha-etim ba-cad. lisgor (gam/#afilu) et maxbarot ha-bxina!
   ‘Ok, now put down your pens. Close your exam papers also/#even!’

For the any puzzle, however, the picture is somewhat murkier. In the command context, my consultant translated any as eyzeshehu, and reported that this item was somewhat degraded in the command expressed by the future form compared to the one expressed by the infinitive. The relevant data are given in (ii).

(ii) A: What do you command?
    B: kra (?eyzeshehu) sefer!
       ‘Read any book!’

   a. likro (eyzeshehu) sefer!
      ‘Read any book!’

There is much to be figured out here, including how eyzeshehu compares to any and the discourse conditions under which the infinitive form may be used to express commands.
theory that will explain this difference. One difference between imperatives and these other expressions that might hint at an answer is that the main function of imperatives is not to update the common ground. If the motivation for inserting $exh$ is strengthen a sentence by making it more informative, perhaps this motivation does not apply in the same way to imperatives.\footnote{I am grateful to Frank Staniszewski for helpful discussions along these lines.} This should be investigated in future work.
Chapter 5

Conclusion

5.1 Main contributions of the thesis

This thesis has examined how presuppositions and focus interact through the lens of presupposition denial. Its main contributions are puzzles about even in various environments; it is my hope that, even if the solutions that I have proposed turn out to be wrong, the puzzles will have something to teach us.

Chapter 2 identified and explored a puzzling polarity-based asymmetry in presupposition denials with even and its crosslinguistic kin in German, Greek, and Russian; these items can be used in negative presupposition denials but only under an appropriate negative operator. The main claim of this chapter was that the observed asymmetry was due to unsatisfied presuppositions triggered within the salient focus alternatives rendering these alternatives undefined, and therefore unable to satisfy the additive presupposition of even. The difference between positive and negative presupposition denials is that only the latter license a parse where the problematic presupposition is negated (thanks to local accommodation below negation) within the focus alternatives, yielding alternatives that are defined and able to satisfy even’s additive presupposition. Thus, presuppositions triggered within focus alternatives matter.

Chapter 3 presented a defence of the controversial additive presupposition of even. The main arguments rested on data showing that even cannot felicitously associate with exhaustively interpreted constituents (e.g., the associate of only, the pivot of an it-cleft, and
mention-all answers to questions.) This chapter explored how the additive component of even could be deployed to account for the differing behaviour of even in embedded and non-embedded disjunctions and discussed how the additive presupposition of complicates and is complicated by a known puzzle involving even in sentences with emotive factive predicates.

Chapter 4 argued that the distribution of even and any can teach us about the structure of imperatives. Whereas strong imperatives pattern differently from both weak imperatives and strong modals with respect to the distribution of broad focus even, they pattern with weak imperatives but differently from strong modals with respect to the distribution of free choice any. Theories where imperatives contain an underlying existential modal that is strengthened by exhaustification to yield strong readings are flexible enough to capture both sets of data. On the existential modal analysis of imperatives, the unacceptability of even in strong imperatives (but not with strong modals) arises because the additive component of even is incompatible with the exclusive component of the exhaustification operator, which is present in strong imperatives but not in strong modal statements. The acceptability of any in strong imperatives (but not under strong modals) results from the structural differences between strong imperatives (exh + \(\Diamond_{imp}\)) and strong modals (\(\Box_{mod}\)); at the point where the licensing conditions of any are checked, strong imperatives are structurally identical to weak modal statements. These arguments offer support for the view that the imperative operator belongs among the growing ranks of apparently universal quantifiers that can be fruitfully analyzed as strengthened existentials.

5.2 The road ahead

Each of the chapters presented above closed with a brief selection of open questions. I would like to end the thesis as a whole in the same way, identifying one more direction for future research. This open question will bring us full circle to the question of what presupposition denials with even can teach us.

Not all presuppositions can be denied with a sentence containing even. The judgements here are delicate and vary across speakers and discourse contexts. All speakers that I have
consulted agree that there are contexts where even denials are acceptable for existence presuppositions, additive presuppositions, and the prestate presuppositions of change-of-state predicates. This is shown in (1), (2), and (3), respectively.

(1) Context: Kenji went to last week’s colloquium party alone.
   A: Did Kenji’s wife go to the party? ~ Kenji has a wife, i.e., is married
   B: He isn’t even married!

(2) Context: Maida was late today, but has never been late before.
   A: Was Maida late for class again? ~ Maida has been late before
   B: She’s never even been late before!

(3) Context: Radu is a lifelong non-smoker; he doesn’t smoke now, and he never has.
   A: Did Radu stop smoking? ~ Radu used to smoke
   B: He didn’t even smoke!

Of the speakers that I have interviewed, a majority also judge even-denials of the presuppositions of both emotive and cognitive factive predicates to be acceptable.¹

(4) Context: Kaz was taking care of Lex’s plants over the summer. The plants are a rare species that produces yellow-brown, wilted-looking leaves; to the casual observer, they may appear to be dead when in fact they are alive. The plants are thriving under Kaz’s care, but Kaz is not happy about this; he wishes that they were dead, because the pollen that they produce is giving him terrible allergies.
   A: Is Kaz sad that Lex’s plants died? ~ (Kaz believes that) Lex’s plants died
   B: They didn’t even die!
   B’: Kaz doesn’t even believe that they’re dead!

(5) Context: Sam has been considering living with Alex. Sam isn’t picky about roommates, but is severely allergic to cats. Alex doesn’t have a cat, but Sam erroneously

¹It should be noted that there is some variation in which presupposition those speakers who accept these denials prefer to deny in the emotive factive case; while most preferred the denial in B, one speaker preferred the denial in B’.

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believes that she does.

A: Does Sam know that Alex has a cat? ~ Alex has a cat
B: Alex doesn’t even have a cat!

Some speakers also allow even to appear in denials of uniqueness and gender presuppositions, while others do not.²

(6) Context: Speaker B has been teaching a class, and over the course of the term has told Speaker A about a student named Alex who kept failing to hand in assignments. Alex is a man and uses he/his/him pronouns, but Speaker A does not know this. Alex handed in his final paper for Speaker B’s course.

A: Tell me about Alex; did she hand in her paper? ~ Alex is [+feminine]
B: %Alex isn’t even a woman/Alex doesn’t even use that pronoun!

(7) Context: Speakers A and B have been editing a paper together. There are two typos on page 3. Speaker B corrected both of them.

A: Did you correct the typo on page 3? ~ There is a unique typo on page 3
B: %There isn’t even just one!/There aren’t even less than two!

This pattern is puzzling because the account of presupposition denials with even presented in Chapter 2 does not predict any variation among presupposition triggers.

There is a second locus of variation that should be mentioned here: the presuppositions of some triggers are compatible with even only in certain contexts, whereas others are insensitive to contextual variation. More particularly, all speakers agree that context matters for the presuppositions of change-of-state predicates. There is a contrast in the acceptability of even-denials between the contexts in (8) (repeated from (3)) and (9), with the latter being degraded compared to the former.

(8) Context: Radu is a lifelong non-smoker; he doesn’t smoke now, and he never has.

²More particularly, some of those interviewed do not allow even-denials of either of these presuppositions; some allow even-denials of both, while one speaker allows even-denials of uniqueness but not gender presuppositions.
A: Did Radu stop smoking? ∝ Radu used to smoke

B: He didn’t **even** smoke!

(9) **Context:** Radu just took up smoking today. Before today, he was a lifelong non-smoker.

A: Did Radu stop smoking? ∝ Radu used to smoke

B: #He didn’t **even** smoke! I This is surprising; in both cases, there is a failure of the prestate presupposition. All other triggers are insensitive to context.

Finally, the pattern that we have just observed for English varies crosslinguistically. The following table shows preliminary results of a survey of English, Russian, Greek, Hebrew, and Vietnamese scalar (additive) items that are licensed in presupposition denials. As the table indicates, all of the triggers surveyed can be denied with in the presence of an **even**-like item in some language. Thus, the availability of **even**-denials varies across triggers, speakers, contexts, and languages.

(10) **Compatibility of presupposition denials with scalar (additive) particles**

<table>
<thead>
<tr>
<th></th>
<th><strong>even</strong></th>
<th><strong>daže</strong></th>
<th><strong>kan</strong></th>
<th><strong>bixlal</strong></th>
<th><strong>thâm chí</strong></th>
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<td>yes</td>
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<td>yes</td>
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<tr>
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<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>factive</strong></td>
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<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
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<td>no</td>
<td>yes</td>
</tr>
<tr>
<td><strong>gender</strong></td>
<td>%</td>
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<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

The observation that the presuppositions of different triggers do not behave uniformly in all respects is not new; several classification systems have been proposed to account for variability among presupposition triggers, but none of them capture the pattern laid out...
above.

Zeevat (1992) proposes a distinction between lexical triggers, which he takes to be preconditions for interpretation, and resolution triggers, which he takes to be anaphoric in a manner similar to pronouns. This classification distinguishes between emotive factives, which fall into the lexical category, and definite descriptions, which fall into the resolution category. Zeevat (1992) places additive triggers, which require an appropriate antecedent but do not add any new information about it, in a class of their own.

Abusch (2002) proposes a distinction between soft and hard triggers. Soft triggers are suspendable, meaning that they can be used even when the speaker is ignorant about whether the presupposition is true or not, while hard triggers are not. The uniqueness presupposition of definite descriptions, the factive presupposition of cognitive factives, and the prestate presupposition of change-of-state predicates are usually classified as soft triggers, while the existence presupposition of possessives and definite descriptions, additive presuppositions, and gender presuppositions are usually classified as hard triggers.

Sudo (2012) proposes a distinction between entailed and non-entailed presuppositions. This classification is couched in a two-dimensional theory of presuppositions; on this view, presuppositions are not definedness conditions but rather exist as independent pieces of meaning in a separate dimension from entailed (assertive) content. Sudo’s classification distinguishes between triggers whose presuppositions are only represented in the presuppositional dimension of meaning and those whose presuppositions are additionally represented in the entailed dimension of meaning. Sudo argues that his system assigns the presuppositions of change-of-state predicates to the latter class and gender presuppositions to the former.

There are also classification systems that have been proposed specifically for differences in how presuppositions behave in focus alternatives. Sauerland (2013) proposes that the presuppositions of purely presuppositional triggers – that is, triggers that, like gender features and additive particles, are truth-conditionally vacuous, serving only to introduce presuppositions – do not get triggered within focus alternatives, while the presuppositions of non-purely presuppositional triggers (e.g., change-of-state predicates and factive predicates) do. Walker (2012), on the other hand, proposes that it is the presuppositions of soft
triggers that do not arise in focus alternatives.  

To summarize, while some speakers allow *even* to appear in denials of all presuppositions of all of the triggers surveyed, other speakers allow it to appear in denials of the presuppositions of some triggers and not others. The set of triggers that can be challenged with declarative *even* denials for the latter group do not form a natural class according to any of the classification systems outlined above.

(11) Comparing *even*-denials and existing classifications of presupposition triggers

<table>
<thead>
<tr>
<th></th>
<th><em>even</em>-denial ok?</th>
<th>lexical?</th>
<th>soft?</th>
<th>purely presuppositional?</th>
</tr>
</thead>
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<td>existence</td>
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<td>yes?</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>additive</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
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<td>yes?</td>
<td>yes</td>
<td>no</td>
</tr>
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<td>cogn. factive</td>
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<td>yes?</td>
<td>yes</td>
<td>no</td>
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<td>no</td>
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<td>yes</td>
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<tr>
<td>gender</td>
<td>%</td>
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<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Although the data presented above are extremely preliminary, they suggest that the acceptability of presupposition denials with *even* and its crosslinguistic kin does not cut along known lines of variation among presupposition triggers; this suggests that there is some hitherto unnoticed source variation among presupposition triggers. What is the relevant property that varies among triggers? How is *even* sensitive to this property? Why does it vary across languages, triggers, and speakers? I will leave these questions open, but the fact that we are able to ask them is hopefully a sign that we have made some progress. Presupposition denials with *even* have much to teach us.

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4These views pair most naturally with two-dimensional theories of presuppositions
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