

# Towards an Etiology of Weak Necessity in a Bengali Modal Based on Homogeneity<sup>‡</sup>

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## 1 Introduction: homogeneity as a presupposition

In this paper, I argue that the meaning of weak necessity (henceforth, “WN”) in the Bengali modal [*hbe*] arises only in its bare habitual form, but not in its other forms, where only strong necessity (henceforth, “SN”) arises (*cf.* Haldar to appear); and a clue to why this happens becomes apparent when we observe that there is something common to bare habituals and WN, that is, homogeneity. As a background for this discussion, we need to appreciate the presuppositional nature of homogeneity.

Recently, there has been some work on diagnosing homogeneity as a presupposition (Wehbe 2022a,b, Doron and Wehbe 2022, Doron 2024, Guerrini and Wehbe 2023). These works are mostly concerned with homogeneity in definite plurals, as is well known from Löbner (2000); Malamud (2012); Magri (2014); Križ (2015, 2016), Križ and Chemla (2015), Križ and Spector (2021); Bar-Lev (2018, 2021); Haslinger (2023); Sbardolini (2023), *inter multa alia*. So, I will demonstrate the workings of the diagnostic developed in Jad Wehbe’s work and then presented in Doron, Wehbe, and Guerrini’s joint works, using definite plurals.

As has been long observed in the work cited above, the interpretation of definite plurals have a truth-value gap. For instance, the truth and falsity conditions of *Mary read the books* show a bipartite all-or-nothing kind of behavior, as shown in (1a-b), while the sentence receives neither truth value when Mary reads only some of the books. This all-or-nothing-like property has been known as *homogeneity*.

- (1) a. *Mary read the books* is **true iff** Mary read **all** the books.
- b. *Mary didn’t read the books* is **true iff** Mary read **none** of the books.
- c. **Neither is true** iff Mary read only some of the books.

[Wehbe (2022b), (1): 1]

Wehbe (2022b), with early accounts of homogeneity (Schwarzschild 1994, Löbner 2000, Gajewski 2005), attempts to demonstrate the presuppositional nature of the homogeneous behavior of definite plurals. This is done based on a fairly recognized property of presuppositions in general, pointed out in unpublished lecture

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notes by Orin Percus (1998) and Kai von Fintel (2022), first fleshed out by Jad Wehbe (2022b), and then implemented in Doron and Wehbe (2022). The observation is that presuppositions can't be the new contribution of an asserted sentence. Kai von Fintel shows this based on (2) in his lecture notes. (2b) conveys the truth of Dzsenifer kissing Amada through the assertion, while (2c) does so through the presupposition. Therefore, (2b) is felicitous, while (2c) isn't.

- (2) a. So, Daiane believes that Dzsenifer kissed Amanda.
- b. Yes, and what's more, Daiane is correct in thinking that (Dzsenifer kissed Amanda).
- c. #Yes, and what's more, Daiane is aware (of) that (Dzsenifer kissed Amanda).

In Wehbe (2022b) and Doron and Wehbe (2022), this insight is fleshed out as the condition in (3), which they call *Post-Accommodation Informativity (PAI)*, where informativity is formalized as in (4).

(3) **Post-Accommodation Informativity**

A sentence  $S_p$  (presupposing  $p$ ) can be uttered felicitously only if  $S_p$  is informative w.r.t. the common ground and QUD after presupposition accommodation.

(4) **Informativity**

A proposition  $p$  is informative with respect to a QUD  $Q$  and a common ground  $C$

$$\text{iff } \exists q \in Q : q \cap C \neq \emptyset \wedge p \cap q = \emptyset$$

[Wehbe (2022b), (6): 2, Doron and Wehbe (2022), (2)-(3): 2]

With PAI as an explicit condition, the following prediction can be made: if homogeneity is a presupposition, then definite plurals will be infelicitous in a common ground which, upon accommodation of homogeneity, makes the assertion trivial. Wehbe (2022b) shows that this prediction is borne out. Consider (5). Let's first see what the homogeneity presupposition of *Mary read the books* is. Given the trivalent meaning of it in (1), the presupposition of the sentence is the disjunction of its truth and falsity conditions (Sudo, Romoli, Hackl, and Fox 2012; Fox 2013). Therefore, this presupposition is: *Either Mary read all of the books or she read none of the books.*<sup>1</sup> For the purposes of this paper and to be concrete, let's say that the assertion of *Mary read the books* is *Mary read some or all of the papers*. All of this is

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<sup>1</sup>I would theoretically commit to a trivalent rendition of (6) because the two-dimensional representation (Karttunen and Peters 1979) in (6) is strictly more expressive than a trivalent representation of truth, falsity, and infelicity conditions. I use the two-dimensional representation in this paper only for expository reasons.

summarized in (6). The common ground entails that Mary read some of the books. Therefore, when (5a) is uttered, accommodating the disjunctive presupposition results in the common ground entailing that Mary read all of the books. Therefore, the assertion, which is *Mary read some or all of the books* is now redundant against this new, post-accommodation common ground, and it violates PAI. This is what, Wehbe argues, accounts for the infelicity of (5a). In (5b), homogeneity is removed by use of the quantifier *all*, and therefore, no infelicity is occurred because a homogeneity presupposition doesn't arise.

(5) **Context:** Jane and Bill want to find out how many of the books on the reading list for their class Mary read. Bill already knows that Mary has read some of the books. But he has come back after doing some more investigation, and he reports:

- a. #I knew that Mary read some of the books. But guess what I found out yesterday. Mary read the books!
- b. I knew that Mary read some of the books. But guess what I found out yesterday. Mary read all of the books!

[based on Wehbe (2022b), (7): 2]

(6)  $\llbracket \text{Mary read the books} \rrbracket$   
 $= \begin{cases} \text{prs:} & \text{Mary read either all or none of the books} \\ \text{asr:} & \text{Mary read some or all of the books} \end{cases}$

This is how homogeneity, as a presupposition, is diagnosed in Doron, Wehbe, and Guerrini's work. What I want to focus on in the remainder of the paper is how the same diagnostic yields exactly parallel effects in bare habituals (section 2), thereby showing that bare habituals have a homogeneity presupposition. In section 4, I show that a WN meaning arises in a Bengali modal, [*ɦɔɔa*], discovered in Haldar (to appear) and discussed here in section 3, only when the modal bears habitual inflection. In section 5, making a link between habituality and WN, I argue that WN — both in English and in Bengali — has a homogeneity presupposition that can be detected in the same way as in the case of bare habituals. In section 6, I conclude the paper by remarking that this very interesting link between habituality and WN, manifesting through a homogeneity presupposition, can be exploited to give a compositional account of this Bengali WN modal and show us an example of a novel strategy used in natural language to give rise to the meaning of WN.

## 2 Homogeneity in bare habituals

Ferreira (2005) and Agha (2021) have noticed that homogeneity is also observed in bare habituals. Consider (7). The truth and falsity conditions of *When Bob gets hurt*,

*he cries* leave out the truth-value gap in (7c). This trivalent nature of the meaning can be summarized as in (8).

- (7) a. *When Bob gets a vaccine, he cries*  
is **true iff** Bob cries all of the times he gets a vaccine.
- b. *When Bob gets a vaccine, he doesn't cry*  
is **true iff** Bob cries none of the times he gets a vaccine.
- c. **Neither is true** iff Bob cries only some of the times he gets a vaccine.

[based on Ferreira (2005), (96): 67]

- (8)  $\llbracket \text{When Bob gets a vaccine, he cries} \rrbracket$   
 $= \begin{cases} \text{prs:} & \text{Bob cries either all or none of the times he gets a vaccine} \\ \text{asr:} & \text{Bob cries some or all of the times he gets a vaccine} \end{cases}$

That such a presupposition is indeed present can be verified by Doron and Wehbe's method. Consider (9). The common ground entails that he cries some of the times he gets a vaccine. So, once (9a) is asserted, the presupposition in (8) gets accommodated and the common ground comes to entail that Bob cries all of the times he gets a vaccine. Therefore, the assertion (which is the one shown in (8)) becomes trivial and (9a) is thus infelicitous. (9b) isn't infelicitous because the quantifier *every* removes homogeneity. This has also been noted briefly in Guerrini and Wehbe (2023).

- (9) Bob's not a kid anymore. I know he's fainthearted and he cries some of the times he gets a vaccine. Maybe because the needle is too long or thick. But guess what I found out yesterday! He's still so incredibly panicky about it that ...
- a. #... he cries when he gets a vaccine.
- b. ... he cries every time he gets a vaccine.

This concludes all the necessary background on homogeneity. Now, I will show that an otherwise SN modal in Bengali, becomes ambiguous between SN and WN only in its bare habitual form — something that is homogeneous itself — and never, for instance, in its future form. Moreover, when in this form, it shows a similar homogeneity presupposition that can be detected in the exact same fashion as above.

### 3 A Bengali weak necessity modal

In Haldar (to appear), I've argued that the Bengali modal [*hine*] can express WN, as well as SN, as shown in (10). (10) shows that, in upward-entailing (henceforth, "UE") contexts, both the WN and SN readings are available. The WN reading (shown

as “ $\Box_{WN}$ ”) is observable in the context in (10a) and the SN one (shown as “ $\Box_{SN}$ ”), in (10b).

- (10)  $\begin{array}{cccc} \text{to-ke} & \text{nfis-e} & \text{af-te} & \text{fid-e.} \\ 2.SG.INFRML-DAT & \text{office-LOC} & \text{COME-INF} & \text{COP-PRS.3} \end{array}$   
 “You {are supposed to/have to} come here.” ( $\checkmark \Box_{SN}$ ,  $\checkmark \Box_{WN}$ ,  $\times \Diamond$ )
- a. **Context:** The addressee doesn’t have to come to the office and can work virtually, but if they do, it makes a good impression and is more desirable. The speaker says this to them. ( $\checkmark \Box_{WN}$ )
- b. **Context:** The addressee has to go to the office in person as a rule. ( $\checkmark \Box_{SN}$ )
- c. **#Context:** The addressee doesn’t ever have to go to their office in person. They always have the option to work from home. It doesn’t even make any extra good impression for them to go to their office. All that matters is the work they deliver, wherever they are. But of course, they have the option to go to their office. ( $\times \Diamond$ )

The claim that the WN reading is indeed available can be confirmed in the following way, inspired by the diagnostic in von Stechow and Iatridou (2008). In (11a-b), with different adverbs in the conjuncts, contradiction arises if the modal isn’t changed appropriately. (11c) shows that when the modal is changed appropriately, contradiction doesn’t arise. That is, the two modals in (12) must be different in exactly the same way the modals in (11c) are. This shows that there’s indeed a WN-SN ambiguity, that is, WN is an available reading.

- (11) a. #You should always do this, but right now, you shouldn’t do this.  
 b. #You always have to do this, but right now, you don’t have to do this.  
 c. You should always do this, but right now, you don’t have to do it.

- (12)  $\begin{array}{ccccccc} \text{to-ke} & & \text{e-ta} & \text{job.somde-i} & \text{kor-te} & \text{fid-e,} & \text{kin-tu} \\ 2.SG.INFRML-DAT & & \text{this-CLF} & \text{all.time-FOC} & \text{do-INF} & \text{COP-PRS.3} & \text{but} \\ \text{æk}^h\text{on} & \text{to-ke} & & \text{e-ta} & \text{kor-te} & \text{fid-e} & \text{n-a.} \\ \text{now} & 2.SG.INFRML-DAT & \text{this-CLF} & \text{do-INF} & \text{COP-PRS.3} & \text{NEG-IMPV} & \end{array}$

**The only possible non-contradictory reading:**

“You should always do this, but right now, you don’t have to do it.”

In non-UE environments, an obligation/permission ambiguity arises. The permission reading is observable in (13a), and the obligation one, in (13b). In (13a), because of the equivalence between  $\neg \Diamond$  and  $\Box \neg$ , we see a neg-raising-like signature.

- (13) to-ke ek<sup>h</sup>ane af-te fiḍ-e n-a.  
 2.SG.INFRML-DAT here come-INF COP-PRS.3 NEG-IMPFV  
 “You {aren’t {supposed/allowed} to/ don’t have to} come here.”  
 (✓□¬, ✓¬□)
- a. **Context:** The addressee is in a place that’s off-limits to them. The speaker, who polices who comes into and goes out of this place, says this to the addressee.  
 (✓□¬/¬◇)
- b. **Context:** The addressee doesn’t have to come to the office everyday in person. The speaker says this to them, “here” meaning “to the office”.  
 (✓¬□)

## 4 Weak necessity only in bare habituals in Bengali

I elaborate at length in Haldar (to appear) on how this instance of WN can be analyzed according to, and thereby bolsters, the account of WN proposed in Staniszewski (2022). For reasons of space, I won’t go into that and focus on another significant aspect of it, which deserves its own paper. One crucial thing about this specific kind of WN that we see in [fiḍe] is that it arises only in bare habituals. For instance, in (10), we have the present habitual inflection and the WN reading is available in this sentence. But once we remove the habitual inflection and inflect the modal into its future form, the WN reading is gone. This is shown in (14).

- (14) to-ke ofis-e af-te fiḍ-b-e.  
 2.SG.INFRML-DAT office-LOC come-INF COP-FUT-3  
 “John {has to/will have to} come to the office.” (✓□<sub>SN</sub>, ✗□<sub>WN</sub>, ✗◇)
- a. **#Context:** The addressee doesn’t have to come to the office and can work virtually, but if they do, it makes a good impression and is more desirable. The speaker says this to them. (✗□<sub>WN</sub>)
- b. **Context:** The addressee has to go to the office in person as a rule.  
 (✓□<sub>SN</sub>)
- c. **#Context:** The addressee doesn’t ever have to go to their office in person. They always have the option to work from home. It doesn’t even make any extra good impression for them to go to their office. All that matters is the work they deliver, wherever they are. But of course, they have the option to go to their office. (✗◇)

(14) involves a UE environment. So, the question of a permission reading doesn’t arise, just as we didn’t see any permission reading in (10). (15) shows that, under negation, that is, a non-UE environment, the permission reading isn’t available

either. Therefore, without habitual inflection, the signatures of WN that we had previously seen all disappear.

- (15) to-ke ek<sup>h</sup>ane af-te fiḍ-b-e n-a.  
 2.SG.INFRML-DAT here come-INF COP-FUT-3 NEG-IMPV  
 “You {don’t have to/won’t have to/#aren’t supposed to/#are required not to} come here.” (X□¬, ✓¬□)  
 a. **#Context:** The addressee is in a place that’s off-limits to them. The speaker, who polices who comes into and goes out of this place, says this to the addressee. (X□¬/¬◇)  
 b. **Context:** The addressee doesn’t have to come to the office and can work virtually. The speaker refer to the office as *here*. (✓¬□<sub>SN</sub>)

Given this state of affairs, I would like to explore the possibility of a hypothesis: that the homogeneity of bare habitual constructions has something to do with the WN reading that seems to arise only in the bare habitual form of the Bengali modal [*fiḍḍa*]. More specifically, I would like to pave the way towards an analysis of this phenomenon that would say that the WN meaning is actually a homogeneity presupposition in the modal realm, which gets globally accommodated just as in the case of homogeneity in definite plurals, as argued by Wehbe (2022b).

## 5 Weak necessity: a presupposition?

Here, I would exploit the same diagnostic Wehbe exploited to argue that homogeneity in definite plurals is a presupposition. What has already been pointed out in the literature (Staniszewski 2022, Agha and Jeretič 2022) is that WN modals do exhibit the kind of truth-value gap in their truth conditions that we see in the case of definite plurals. For instance, consider (16). A property of homogeneity is that if a predicate is true of a definite plurality, then asserting that that predicate is false of some members of that plurality is infelicitous ((16a)). This is similar to the way universal quantifiers behave ((16b)). However, with negation, definite plurals and universal quantifiers diverge in this respect. As opposed to universal quantifiers ((17b)), definite plurals take obligatory wide scope with respect to negation, so asserting exceptions is again bad ((17a)). This is really just a ramification of the all-or-nothing-like behavior of definite plurals.

- (16) a. The guests are here, #but some of them aren’t.  
 b. Every guest is here, #but some of them aren’t.

- (17) a. The guests are not here, #but some of them are.  
b. Every guest is not here, ✓but some of them are.

[Agha and Jeretič (2022), (5)-(6): 834]

Crucially, the same profile is found when we look at WN and SN modals. This is shown in (18)-(19). Staniszewski (2022) has observed the same fact independently, as shown in (20)-(21).

- (18) a. According to the rules, you should go,  
#but you're allowed not to go.
- b. According to the rules, you have to go,  
#but you're allowed not to go.

- (19) a. According to the rules, you shouldn't go,  
#but you're allowed to go.
- b. According to the rules, you don't have to go,  
✓but you're allowed to go.

[Agha and Jeretič (2022), (8)-(9): 834-835]

- (20) a. #Travis shouldn't leave, but it's okay if he does.  
b. #Amanda isn't supposed to leave, but it's okay if she does.

- (21) a. Amanda isn't required to leave, but it's okay if he does.  
b. Amanda doesn't have to leave, but it's okay if she does.

[Staniszewski (2022), (9b-c), (10): 180]

What these authors don't explore is whether this homogeneous behavior of WN modals is a presupposition. But given everything we've seen from Wehbe's diagnostics, this is something we want to know. When we apply Wehbe's diagnostics to WN modals, the result is what we see in (22). There's some variability in these judgements. But all the speakers I've consulted have reported that there's something "subtly wrong" with (22a), compared to (22b), which, interestingly, can be alleviated by putting significant stress on *should/is supposed to*. This method of alleviating the violation of PAI isn't available to definite plurals, no matter where one places the stress ((5a)). This is an effect we want to understand the source of, but for the purposes of this paper, I merely want to point out that that, **if there's no stress on**



*should/is supposed to*, the judgement is one of oddness, as in (5a). Guerrini and Wehbe (2023) briefly discuss examples like this, but, for reasons I can't fully be sure about, they don't detect the oddness I report here. Perhaps, Guerrini and Wehbe's (2023) judgement was the result of uttering the example with stress on *should/is supposed to*.<sup>2</sup>

- (22) a. ??I already knew that John was allowed to come. But guess what! He {should/is supposed to} come.  
 b. I already knew that John was allowed to come. But guess what! He's required to come.

Getting back to Bengali now, we now want to apply the same test to Bengali [*hɔɔ̃*]. However, I will apply this test to negative sentences, instead of affirmative ones, because while negated [*ɦɔɔ̃*] is ambiguous between  $\neg\Box_{SN}$  and  $\neg\Diamond$ , only the latter is consistent as a follow up that entails a previously asserted  $\neg\Box_{SN}$  sentence. That is, to say something like *I knew that  $\neg\Box_{SN}p$ , but then I learned something new, which is  $\neg\Box_{SN}p$*  is infelicitous; therefore, the only felicitous parse is to resort to a truth-condition equivalent to *I knew that  $\neg\Box_{SN}p$ , but I learned something new, which is  $\neg\Diamond p$* , because  $\neg\Diamond$  asymmetrically entails  $\neg\Box_{SN}$  — a disambiguation that is not available in the affirmative cases because of the SN-WN ambiguity. As a corresponding definite plural example of such a test, consider the minimal pair in (23). What (23) shows is that the homogeneity presupposition of definite plurals projects from under negation, as would be expected if it were indeed a presupposition. This point is also made in Guerrini and Wehbe (2023).

- (23) a. #I knew that Mary didn't read all of the books. But guess what! She didn't read the books.  
 b. I knew that Mary didn't read all of the books. But guess what! She didn't read any of the books.

[(23a) based on Guerrini and Wehbe's (2023) (3b)]

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<sup>2</sup>I should mention, in this regard, Haslinger (2023). One of the central points she begins her dissertation with is the observation that “imprecise” expressions, for instance, homogeneous expressions (imprecise because of the potential for non-maximality) involve less morphology or, more generally, a relatively diminished amount of pronunciation, compared to their more precise counterparts. For instance, the definite plural *the boys* in *The boys are asleep* is homogeneous and involves the potential for non-maximality, therefore, is more imprecise than the expression *all the boys* in *All the boys are asleep*. Her claim, additionally, is that it's never the case, cross-linguistically, that it's the other way around, that is, imprecision arising from more morphology and precision arising from less morphology. Given this background, if we understand phonological stress as “more morphology” in some sense to be made precise, then the phenomenology reported above about WN makes perfect sense, because then, we can imagine the stress basically removing homogeneity and turning it into the more precise SN counterpart. This is all very provisional, but it's an intriguing path to explore in future research. Thanks a lot to Viola Schmitt for class discussions that brought out this insight.

Against this background, consider (24), which is an exact parallel of (23) in the modal domain. Again, the reader is cautioned to read *shouldn't/isn't supposed to* without any stress.

- (24) a. ??I knew that John isn't required to come. But guess what! He {shouldn't/isn't supposed to} come.  
 b. I knew that John isn't required to come. But guess what! He isn't allowed to come.

What I find is that the Bengali version of (24) shows the same effect, as shown in (25). That is, it behaves like (23). I argue that this is evidence in favor of WN, in general, and the specific WN modal [*fiṇe*] in Bengali, having a homogeneity presupposition, just as it has been argued for definite plurals in Wehbe (2022b) and Guerrini and Wehbe (2023).

- (25) a. ??ami            ḡan-t-am            ḡe    ṭṭaru-r            aḡ-a  
           1.SG.NOM    know-HAB-PST.1    that   Charu-GEN    come-NMLZ  
           baḡ<sup>h</sup>:oṭamulok n-a.            kintu aḡ    æk-ta    notun ḡinif  
           obligatory            NEG-IMPV    but    today    one-CLF    new    thing  
           ḡan-l-am.            ṭṭaru-ke    aḡ-te            fiṇ-e            n-a.  
           know-PFV-PST.1    Charu-DAT    come-INF    COP-PRS.3    NEG-IMPV

**Intended:**

#“I knew that Charu isn't required to come. But today, I found out something new. Charu {shouldn't/isn't supposed to} come.”

- b. ami            ḡan-t-am            ḡe    ṭṭaru-r            aḡ-a  
           1.SG.NOM    know-HAB-PST.1    that   Charu-GEN    come-NMLZ  
           baḡ<sup>h</sup>:oṭamulok n-a.            kintu aḡ    æk-ta    notun  
           obligatory            NEG-IMPV    but    today    one-CLF    new  
           ḡinif ḡan-l-am.            ṭṭaru-r            aḡ-a-r            onumoti  
           thing    know-PFV-PST.1    Charu-GEN    come-GEN    permission  
           nei.  
           NEG.exist.PRS.3

“I knew that Charu isn't required to come. But today, I found out something new. Charu isn't allowed to come.”

## 6 Outlook and conclusion

In the conclusion, I would like to draw the reader's attention to some core take-aways of this paper: (i) bare habituals are homogeneous (ii) there have been recent arguments in favor of homogeneity being a presupposition, and (iii) the WN modal

discovered in Haldar (to appear) and discussed here shows its WN meaning when the modal bears the habitual inflection and shows traits of a homogeneity presupposition. What I would like to pursue in future work is a compositional account of how these three phenomena can be unified. This will also show us a concrete example of a new strategy to give rise to the WN meaning in natural language. I believe this can be done, along the lines of presuppositional implicature accounts of homogeneity, such as Doron (2024), based on further interactions between aspect and modality, for which I have no more space left.

## References

- Agha, Omar. 2021. Homogeneity effects in habituals and temporal adverbs. Handout for SALT 31.
- Agha, Omar, and Paloma Jeretič. 2022. Weak necessity modals as homogeneous pluralities of worlds. In *Proceedings of SALT 32*, ed. John R. Starr, Juhyae Kim, and Burak Öney, 831–851. Linguistic Society of America.
- Bar-Lev, Moshe E. 2018. Free choice, homogeneity, and innocent inclusion. Doctoral Dissertation, The Hebrew University of Jerusalem.
- Bar-Lev, Moshe E. 2021. An implicature account of homogeneity and non-maximality. *Linguistics and Philosophy* 44:1045–1097.
- Doron, Omri. 2024. Disjunctive inferences and presupposition projection. Talk given at the LF Reading Group at MIT on February 28, 2024.
- Doron, Omri, and Jad Wehbe. 2022. A constraint on presupposition accommodation. In *Proceedings of the 23rd Amsterdam Colloquium*, 405–411. ILLC.
- Ferreira, Marcelo. 2005. Event quantification and plurality. Doctoral Dissertation, Massachusetts Institute of Technology.
- von Fintel, Kai, and Sabine Iatridou. 2008. How to say ought in Foreign: The composition of weak necessity modals. In *Time and modality*, ed. J. Guéron and J. Lecarme, volume Studies in Natural Language and Linguistic Theory 75, 115–141. Berlin, Germany: Springer.
- Fox, Danny. 2013. Presupposition projection from quantificational sentences: trivalence, local accommodation, and presupposition strengthening. In *From grammar to meaning: formal developments, new findings, and challenges*, ed. Ivano Caponigro and Carlo Cecchetto, 201–232. Cambridge, United Kingdom: Cambridge University Press.
- Gajewski, Jon. 2005. Neg-raising: Polarity and presupposition. Doctoral Dissertation, Massachusetts Institute of Technology.
- Guerrini, Janek, and Jad Wehbe. 2023. Homogeneity as *pex*. Handout for a talk presented at the workshop *Gaps and Imprecision in natural language semantics: Homogeneity effects and beyond*, Vienna.
- Haldar, Shrayana. to appear. Threefold ambiguities between permission, weak necessity, and strong necessity in a Bengali modal. In *Proceedings of FASAL 14*.

- Haslinger, Nina. 2023. Pragmatic constraints on imprecision and homogeneity. Doctoral Dissertation, University of Göttingen (Georg-August-Universität Göttingen).
- Karttunen, Lauri, and Stanley Peters. 1979. Conventional implicature. *Syntax and Semantics* 11:1–56.
- Križ, Manuel. 2015. Aspects of homogeneity in the semantics of natural language. Doctoral Dissertation, University of Vienna.
- Križ, Manuel. 2016. Homogeneity, non-maximality, and *all*. *Journal of Semantics* 33:493–539.
- Križ, Manuel, and Emmanuel Chemla. 2015. Two methods to find truth-value gaps and their application to the projection problem of homogeneity. *Natural Language Semantics* 23:205–248.
- Križ, Manuel, and Benjamin Spector. 2021. Interpreting plural predication: homogeneity and non-maximality. *Linguistics and Philosophy* 44:1131–1178.
- Löbner, Sebastian. 2000. Polarity in natural language: predication, quantification and negation in particular and characterizing sentences. *Linguistics and Philosophy* 23:210–308.
- Magri, Giorgio. 2014. An account for the homogeneity effects triggered by plural definites and conjunction based on double strengthening. In *Pragmatics, semantics and the case of scalar implicatures*, 99–145. Palgrave Macmillan.
- Malamud, Sophia A. 2012. The meaning of plural definites: A decision-theoretic approach. *Semantics & Pragmatics* 5:1–58.
- Sbardolini, Giorgio. 2023. Homogeneity and the illocutionary force of rejection. In *Proceedings of SALT 33*, ed. Juhyae Kim, Burak Öney, Yao Zhang, and Fengyue (Lisa) Zhau, 399–420. Linguistic Society of America.
- Schwarzschild, Roger. 1994. Plurals, presuppositions and the sources of distributivity. *Natural Language Semantics* 2:201–248.
- Staniszewski, Frank. 2022. Modality and time in logical context. Doctoral Dissertation, Massachusetts Institute of Technology.
- Sudo, Yasutada, Jacopo Romoli, Martin Hackl, and Danny Fox. 2012. Presupposition projection out of quantified sentences: Strengthening, local accommodation and inter-speaker variation. In *Proceedings of amsterdam colloquium 18*, ed. Maria Aloni, Vladimir Kimmelman, Floris Roelofsen, Galit Weidman Sassoon, Katrin Schulz, and Matthijs Westergaard, 210–219. Berlin: Springer.
- Wehbe, Jad. 2022a. Revisiting presuppositional accounts of homogeneity. Talk given at the LF Reading Group at MIT on November 16, 2022.
- Wehbe, Jad. 2022b. Revisiting presuppositional accounts of homogeneity. In *Proceedings of the 23rd Amsterdam Colloquium*.