In this paper we aim at providing a fine-grained explanation for the scopal interactions between negation and Deontic Modals (DM). English *must, ought, should* scope over negation but *have to, need to, may* and *can* scope under negation. There is also NPI DM *need* (different from *need to* in not agreeing and in not supporting *to*). This DM scopes under negation and requires negation to be in the sentence:

1. Sue mustn’t/oughtn’t to/shouldn’t leave
2. Sue doesn’t have to/need to leave
3. Sue can/may not leave
4. Sue need *(not) leave

Iatridou & Zeijlstra (2009) argue that 1-4 is explained if it is assumed that (i) polarity effects arise in the domain of universal DMs and that moreover this entails that they will not arise in the domain of existential DMs; and (ii) that all deontic modals must be interpreted VP-in situ if their polarity requirements allow for that. In short, it is argued that *must, ought* and *should* are Positive Polarity Items (PPIs) (cf. Homer 2009 for a similar view on English *must*), whereas *have to* and *need to*, as well as *can* and *may* are polarity neutral. Since only PPIs cannot be interpreted in their VP-internal base position, they are the only ones being triggered to raise to a position outscoping negation.

In this paper we present two phenomena that at first sight appear to be problematic for this analysis. The first phenomenon concerns the variation w.r.t. *must* and Negative Indefinite (NI) subjects. While speakers agree on *must* having scope over the sentential negative marker (as in 1), speakers differ in their judgments on NI subjects (Iatridou and Sichel 2009): whereas all speakers assign a reading \(\neg > \exists\) to sentences like 5, some speakers of English also permit \(\neg > \exists \). We refer these two varieties of English as “English A” and “English B”.

5. Nobody must leave
   a. \(\neg > \exists, \neg > \exists\) (English A)
   b. \(\neg > \exists\) (English B)

In the second phenomenon we see that PPI *must* can remain in the scope of negation when other scopal material intervenes, as shown in 6 (from Homer 2009), exactly like some other PPIs can (cf. Szabolcsi 2004). However, PPI *should* cannot do this and must still scope over negation (7).

6. Everything mustn’t be expensive to be worthwhile
7. Everything shouldn’t be expensive to be worthwhile

The above facts automatically lead to the following questions:

**Q1.** How can the distinction between English A and B be accounted for?

**Q2.** How can the distinction between *must* and *should* be accounted for?

We will argue that Q1-2 can be successfully answered once it is understood that English A *must*, English B *must* and *should* reflect different types of PPIs along the lines of Van der Wouden 1994 and Szabolcsi 2004 (see Table I). If PPIs come about in different types, as shown in Table I, after van der Wouden, it is to be expected that DM PPIs come into different types as well. We therefore suggest the pattern in Table II.

Now the first and second observations follow: as to Q1, the difference between English A and B is due to the PPI status of *must*: In English A *must* is a PPI of medium strength; in English B, by contrast, *must* is a weak PPI. Therefore in English A *must* cannot scope under anti-additive *nobody* or under anti-morphic *not*, whereas in English B it can, since *must* is only banned from anti-morphic contexts, not from anti-additive ones. Note that such intra-linguistic variety is not uncommon. Many NPIs are known to be subject of such intra-linguistic variation.
as well (cf. Hoeksema 2002). But this doesn’t fully explain the contrast in 5. In English B, even though must is directly outscoped by anti-additive nobody, it is also in the scope of an anti-morphic negation, namely the negative ingredient of the NI subject nobody. The scopal ordering of 5b is $\neg > \exists > \cdot$. However, since the existential part of nobody acts as an intervener, must may remain in the scope of an anti-morphic negation. In English A, this intervening existential on the other hand cannot act as an intervener, as it brings must under the direct scope of an anti-additive context again.

Also the answer to Q2 follows. Take the minimal pair in 6-7: in 6 everything acts as an intervener between must and negation. In 7 however it cannot act as such an intervener. This is due to the fact that even though everything intervenes between must and $\neg$, the context $\neg > \forall$ is still downward-entailing, a context where should is not allowed to surface, as opposed to both types of must.

To conclude, what appeared as two counterexamples Iatridou & Zeijlstra’s polarity account of the interaction of DMs and negation are in effect two phenomena which can be explained very well within this account and thereby strengthen it.

### Table I: Van der Wouden (1994):

<table>
<thead>
<tr>
<th>Type of PPI</th>
<th>Example</th>
<th>Notes</th>
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</thead>
</table>
| Weak PPI (only blocked in anti-morphic contexts) | “nog” (yet) | Weinig monniken zijn nog gelukkig  
Few monks are yet happy  
Niemand is nog gelukkig  
Nobody is yet happy  
*De monnik is niet nog gelukkig  
The monk isn’t yet happy |
| PPI of medium strength (blocked in all anti-additive contexts) | “een beetje” (a bit) | Weinig monniken zijn een beetje gelukkig  
*Niemand is een beetje gelukkig  
*De monnik is niet een beetje gelukkig |
| Strong PPI (blocked in all downward-entailing contexts) | “allerminst” (not in the least) | *Weinig monniken zijn allermindst gelukkig  
*Niemand is allermindst gelukkig  
*De monnik is niet allermindst gelukkig |

### Table II: Proposal

<table>
<thead>
<tr>
<th>Type of PPI</th>
<th>Must (English B)</th>
<th>Notes</th>
</tr>
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</table>
| Weak PPI | He mustn’t leave  
Few people must leave  
Nobody must leave | *: $\neg > \cdot$  
OK: few $> \cdot$  
OK: $\neg > \exists > \cdot$ |
| PPI of medium strength | He mustn’t leave  
Few people must leave  
Nobody must leave | *: $\neg > \cdot$  
OK: few $> \cdot$  
*: $\neg > \exists > \cdot$ |
| Strong PPI | He shouldn’t leave  
Few people should leave  
Nobody should leave | *: $\neg > \cdot$  
*: few $> \cdot$  
*: $\neg > \exists > \cdot$ |

### References: