Imperatives with the calling contour

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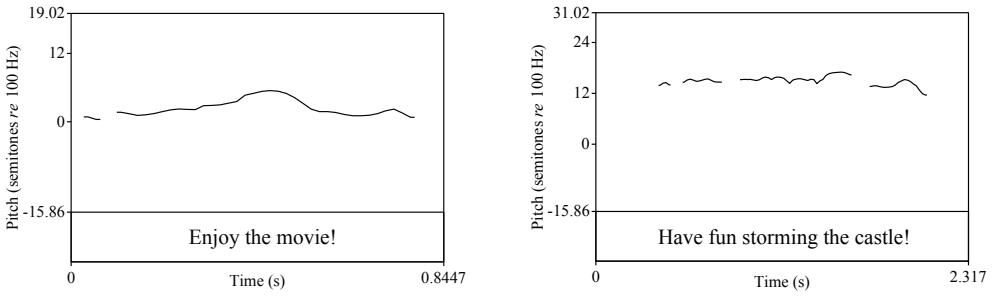
1 Introduction

Certain intonational configurations contribute highly nuanced meanings that are difficult to capture or distill. One such intonation is the 'calling contour' in American English, which we describe as a 'downstepped level terminal contour' (shortened as DLT), and transcribe as H* !H-L%, reflecting the distinct intonational profile demonstrated in figure 1. The 'calling contour' has been widely noted to occur with vocative or phrasal utterances, and has often been associated with diverse social and interactional meanings, ranging from lack of urgency to familiarity.

In this paper, we examine the systematic pairing between this 'calling contour' and a particular sentence type: imperatives. While the potential meaning contributions of the calling contour have been documented in previous work, it has never been looked at in the context of imperatives, although, as we will show, it occurs quite robustly and systematically with them. To give a concrete idea of how imperatives with calling contours sound, figure 1 presents the pitch contours of two examples. The sound clips can be accessed at `audio1` and `audio2`.[1]

Figure 1: Examples of DLT imperatives



We observe that DLT is usually compatible with imperatives favoring certain types of illocutions, such as well-wishes, but incompatible with imperatives favoring other types of illocutions, such as orders and offers. We also note that even when DLT is paired with compatible illocutions, its felicity/infelicity ultimately depends on certain contextual information. We hypothesize that the relevant contextual information is the extent of expected speaker involvement in the realization of the content of the imperative. We corroborate this hypothesis and further establish our initial

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[1]The second clip has been extracted from the movie *The Princess Bride*. Thanks to Prerna Nadathur for the pointer.

descriptive observations with an experimental study including contextual manipulations, as well as prosodically manipulated stimuli representing DLT vs. non-DLT imperatives.

We propose an analysis of the interaction between the intonation (DLT) and the sentence type (imperatives) in terms of their respective conventionally determined meanings. The analysis accounts for the illocution-dependent as well as other context-dependent aspects of the felicity of DLT imperatives. Although the main purpose of our analysis is to clarify the interaction between imperatives and DLT, our account of DLT is shown to generalize to non-imperative utterances (vocatives, declaratives, etc.).

In developing our analysis, we bring together two strains of inquiry: One focusing on the intonational meaning of DLT, the other focusing on the functional heterogeneity of imperatives. We show that DLT imperatives present an interesting case study to the more general issue of the *form-force* mapping, via which we can examine the systematic interactions between intonation, sentence-type, content, and the context, and how these come together to signal a variety of illocutionary, perlocutionary, and often highly nuanced social meanings.

2 The calling contour

2.1 Previous work

The contour in question (H* !H-L%) was originally discussed in Pike (1945). Pike describes the tune as a 'spoken chant', and argues that it is often used to summon someone. He gives examples in which the tune combines with vocative utterances, as in 1a. The tune has henceforth been standardly referred to as the 'calling contour'. In later work, Abe (1962), Fox (1969), Liberman (1975), Leben (1976), and Gibbon (1976) all attribute similar types of meaning to the tune, or attempt to further refine Pike's core observation. For instance, Liberman (1975) categorizes it as one variety of his 'warning/calling tune', and Fox (1969) notes that the tune is appropriate when calling someone who is some distance away or out of sight.

(1) a. *Anna!* H* !H-L% (Pike 1945)
b. *Jacob!* H* !H-L% *Your lunch!* H* !H-L% (Ladd 1978)
c. *Fire!* #H* !H-L% (Ladd 1978)

Ladd (1978) observes that the tune is not confined to summoning or warning utterances, but is often used in contexts where a familiar routine (shared between the speaker and the addressee) is evoked, as in 1b. Extrapolating from such uses, Ladd argues that the tune has a core meaning of 'stylization', or shared convention. He further adds that the convention signaled by this tune can be a private one between individuals, with the "flavor of everyday domestic life" (p. 520). In the case of 1b, for example, the 'calling contour' would signal that Jacob is being summoned

to his lunch yet again, and that this is a part of an established, stereotypical routine between the speaker and the addressee (Jacob). Ladd also notes that since the tune evokes familiar routines, it cannot be felicitously used in unfamiliar, urgent situations or emergencies, as seen in 1c, where the infelicity of the intonation is marked with #. Using minimal pairs with the same utterance in different contexts, Ladd highlights the fact that infelicity arises when the tune is used in contexts in which no shared convention or familiar routine can be inferred. For instance, the tune is infelicitous with the imperative *Look out for the broken steps!* as an out of the blue warning, but felicitous in a context where the addressee knows about the broken steps.[2]

Another take on this tune can be found in Pierrehumbert and Hirschberg (1990), whose main goal is to present a decompositional analysis of English intonation. Pitch accents, phrase accents, and boundary tones contribute distinct types of elementary meanings and combine with each other to derive more targeted meanings. In line with this broader aim, Pierrehumbert and Hirschberg break down the tune into its subparts: the nuclear pitch accent (H*+L),[3] the phrase accent (H-), and the boundary tone (L%). In generating the desired meanings associated with the tune, they attribute the bulk of its conventionalized meaning to the nuclear pitch accent H*+L. They propose (see p. 297) that H*+L signals that the salience of the accented item should be inferred from mutual public beliefs of the hearer and the speaker, which can be identified with the notion of the common ground in Stalnaker (1978). By comparison, the phrase accent H- and the boundary tone L% are argued to have more of a demarcating effect.

Pierrehumbert and Hirschberg (1990) argue that their analysis can give a more precise and comprehensive account of the tune than Ladd's 'stylization' account. For 1b, for instance, their analysis predicts that use of the intonation is appropriate when Jacob is already expecting his lunch and can infer the reason why it is being brought to his attention. In addition, they claim that the nuclear pitch accent H*+L of the tune (and by extrapolation, the entire tune itself) can be used to emphasize something that isn't necessarily associated with any shared past history between the interlocutors, but rather associated with information already in the common ground.[4] Finally, they observe that the nuclear pitch accent H*+L of the tune often has "a pedagogical flavor" (p. 298) and that this is expected on their account, as teaching often involves pointing the learner to connections between old and new information.

Previous work on the 'calling contour' thus captures the summoning, warning via reminder, or 'stylized' uses of the tune. It also describes a range of nuanced social and interactional meanings

[2]We discuss such cases in terms of our analysis in section 7.1.

[3]Following the later ToBI transcription convention proposed by Beckman and Ayers (1997) the present paper transcribes the +L part in this nuclear pitch accent as a downstep (!) in the subsequent tonal target. What Pierrehumbert and Hirschberg (1990) refer to as H*+L H-L% is thus equivalent to the tune we transcribe as H* !H-L%, except that the latter reflects more recent modifications to the ToBI transcription conventions.

[4]The actual example that they give to demonstrate this isn't H*+L H-L% itself, but H*+L combined with another type of phrase accent: H*+L H-H%; however, they expect this observation to be generalized to H*+L H-L% as well.

that can be associated with the tune, such as the existence of some physical distance between the interlocutors (Fox 1969), pedagogical flavor (Pierrehumbert and Hirschberg 1990), shared past history and everyday domesticity (Ladd 1978). At the same time, all previous work on the tune seems to assume that it has a rather special status (hence the notion of stylization), and focuses on cases in which the tune is paired with highly ritualistic phrases (like 'your lunch', or vocatives) and not with full sentences used in more ad hoc situations.[5]

It turns out, however, that H* !H-L% occurs quite robustly with full sentences, albeit with interesting restrictions. In particular, imperatives can host the tune provided context, content and illocutionary force are of the right type.[6] In addition, the meaning contribution of H* !H-L% has not yet been discussed in the broader context of sentence types and speech acts, although it seems to have systematic repercussions on inferences related to illocutionary force. The following section examines these effects and establishes a close connection between H* !H-L% and imperatives.

2.2 The calling contour with imperatives

Imperatives are associated with a heterogeneous range of illocutions (see Schmerling (1982)). Not only can they be used directively to command, request, or warn, but also to give advice, to offer, or to merely express a wish. The calling contour H* !H-L% occurs with a systematic subset of imperative uses. It standardly combines with imperatives that signal well-wish illocutions, as can be seen in 2a and 2b. It can also combine with 'mnemonic imperatives', in the sense of Crone (2016), with the function of reminder advice or request, as can be seen in 2c and 2d.[7] In contrast, the tune sounds infelicitous when combined with imperatives favoring other types of illocutions such as orders, non-mnemonic requests, offers, or advice, some of which are exemplified in 3.

(2) a. *Enjoy your dinner!* H* !H-L% [well-wish]

b. *Have a nice trip!* H* !H-L% [well-wish]

c. (speaker addressing his daughter while dangling the lunchbox from afar)
Don't forget your lunchbox! H* !H-L% [mnemonic advice]

d. (speaker about to leave the house addressing the house-sitter)
Remember to feed the cats! H* !H-L% [mnemonic request]

(3) a. *Hand in the assignment by Friday!* #H* !H-L% [order]

[5]To some extent, Pierrehumbert and Hirschberg (1990) and Ladd (1978) touch on examples involving full sentences. However, the examples of full sentences presented by the former do not directly concern the entire H* !H-L% tune itself, but rather just the nuclear pitch accent H*+L, and those presented by the latter are still subsumed under the more general characterization of 'stylization' and stereotypical usages.

[6]A few imperative examples appear in Ladd (1978) as we saw above. However, he treats them as part of the more general 'reminder warning' cases and does not mention the potential significance of their sentence type (imperative). He also does not bring in other systematic classes of imperatives that standardly host the tune, such as well-wishes.

[7]These differ in illocution from the 'reminder warnings' noted by Ladd (1978), although the notion of memory seems to play a role in both cases.

b. *Please close the window!* #H* !H-L% [request]
c. *Take a cookie!* #H* !H-L% [offer]
d. *Take your medicine for another week!* #H* !H-L% [advice]

The calling contour on imperatives often gives rise to particular perlocutionary and social meanings, such as friendliness and politeness (especially for well-wish cases) that are absent in the summoning or warning uses of the tune. Finally, we note that the tune can occur with full declarative utterances as well, but again with different illocutionary and perlocutionary inferences from the vocative and imperative cases. These often work to signal admonitions or advice, and seem to have the perlocutionary flavor of offhandedness. We postpone discussing these case until section 7.7 and focus on imperative examples in the main part of the paper. Given that H* !H-L% can combine with non-calling utterances, we will henceforth refer to it as DLT, short for down-stepped level terminal contour, as noted in the introduction.

The occurrence of DLT with imperatives calls for a reassessment of its hypothesized meaning contribution in previous work. Accounts that directly attribute the function of 'calling' or 'warning' to DLT are obviously too narrow and restricted in capturing the uses in which the tune combines with well-wishes or mnemonic requests. Ladd's 'stylization' account, although a lot more general, still seems to have difficulty capturing the exact flavors of the imperative examples. In particular, it cannot explain the split in the uses seen in 2 and 3. There is no a priori reason why well-wishes and mnemonic requests can be stylized but orders and offers, which can be just as stereotypical and ritualized, cannot. Moreover, 2d is felicitous with DLT even when the speaker is talking to a temporary cat-sitter who has never fed the speaker's cat before, hence there is no stereotypical routine to evoke. Similarly, Pierrehumbert and Hirschberg's analysis seems insufficient to capture the observation that imperatives with certain illocutionary biases can host DLT, but those with other illocutionary biases cannot. For instance, offers like 3c can be made in contexts where the preconditions of salience and mutual beliefs are satisfied but the tune is simply infelicitous.

A first-cut generalization about the connection between the illocutionary force of imperatives and the felicity of DLT is to say that depending on the content, the intonation endows imperatives with a particular illocution, such as well-wish. One could even carry this view a step further and reconcile it with existing approaches that associate 'reminder warnings' or 'summonings' with the tune; interpretations such as well-wishes can simply be added to the inventory of possible illocutions prescribed by the tune and chosen on the basis of the tune and the content. However, imperatives with the same content and illocutionary force favor or disfavor DLT depending on the context.[8] In 4 and 5, an imperative is put in two different contexts. Its illocutionary force

[8] As noted earlier, Ladd (1978) was the first to observe that the felicity of a given calling contour depends on certain contextual information, even when the content of the utterance remains the same. As will be shown in section 7.1, his generalization on what the relevant contextual information is differs from our account.

remains the same but the context affects the felicity of DLT. These examples suggest that the felicity/infelicity of DLT is sensitive to certain contextual inferences that don't make any reference to illocutionary distinctions. Therefore, DLT not only constrains the possible forces, however that happens, but it also has an effect even with a fixed illocutionary force.

(4) a. (Addressee has a light cold) *Get well soon!* H* !H-L% [well-wish]
b. (Addressee is seriously ill) *Get well soon!* #H* !H-L% [well-wish]

(5) a. (Speaker is stepping out the door while addressing the house-sitter)
Remember to feed the cats! H* !H-L% [request]
b. (Speaker is in the process of giving out instructions to the house-sitter)
Remember to feed the cats! #H* !H-L% *I'll leave a reminder note.* [request]

These observations suggest that a variety of factors conspire to generate the cloud of meanings associated with DLT imperatives, as well as their patterns of felicity/infelicity. First, the sentence type seems to play an important role, as DLT with imperatives generates systematically different illocutionary and perlocutionary inferences from DLT with vocatives or declaratives. Second, content seems to matter, as utterances with the content of 2a strongly favor DLT from the get-go, whereas those with the content of 3a do not. Third, illocutionary force plays a role as well: well-wish and mnemonic imperatives can generally host DLT, whereas imperatives favoring other illocutions cannot. Finally, the context seems to play a big part, as shown by 4 and 5. Our ultimate goal is to clarify the respective contributions of each of these factors.

3 Hypothesis

In order to corroborate our intuitions and to better understand the respective contributions of each of the factors above, we gathered more controlled empirical data on DLT imperatives by testing our generalizations via a perception experiment. For this purpose, we translated our observations into more specific, testable predictions. Based on the observations about 2 and 3, we first hypothesized that DLT will be judged to be felicitous when combined with imperatives that signal well-wishes or mnemonic requests and advice, but infelicitous when combined with imperatives that signal orders, offers, non-mnemonic requests and advice, etc. We also hypothesized that a non-DLT intonation will be preferred for these imperatives (e.g., the standard falling contours such as H* L-L% or L* L-L%, which have been noted to occur with imperatives by Keough et al. (2016)). Second, we hypothesized that while DLT is generally compatible (and preferred) with imperatives that signal well-wish or mnemonic requests and advice, its felicity in these cases is ultimately dependent on certain contextual information.

What could be the nature of the relevant contextual information that significantly affects the felicity/infelicity of DLT imperatives? One hypothesis is that the felicity of DLT imperatives de-

pends crucially on the extent of expected speaker control and future involvement in ensuring the realization of the content of the imperative. (We assume that the content of the imperative is the proposition corresponding to its fulfillment conditions, e.g., for 2b the proposition that the addressee has a nice trip.) For instance, it seems that the core contextual condition that renders DLT felicitous in 5a is the impending departure of the speaker, which preempts further involvement of the speaker in the addressee's remembering to feed the cats. Relatedly, it seems that the core contextual information that renders DLT infelicitous in 5b is the speaker's follow-up utterance promising a reminder note, which signals that the speaker can and will be further involved in the realization of the addressee's remembering to feed the cats.

Note that according to the formulation above, the relevant contextual information does not just concern the *objective* extent of speaker control. Rather, what is at issue is the choice of the speaker to bring attention to, or to signal this lack of speaker control. Regarding 4, for instance, in reality a given speaker can rarely have any control over a given addressee's recovery rate regardless of the seriousness of the illness. However, in the case of serious illness, the speaker is likely to be socially motivated to *not* draw attention to this contextual information, and to at least act as though she can be further involved in the addressee's speedy recovery. In contrast, for minor ailments, drawing attention to a lack of control may instead work to signal non-presumptuousness and friendly well-wishes on the part of the speaker, in the vein of 'I can only offer my words, but I do hope that you get well soon.' (see section 6 for more discussion).

We thus hypothesized that the felicity of DLT will depend significantly on the variation in the extent of expected speaker control and future involvement, even when the content and the illocutionary inference associated with a given imperative is held constant. More specifically, we hypothesized that for a given imperative with the same content and illocution, participants will prefer non-DLT when the context is such that the speaker is expected to be further involved (via her actions) in bringing about the realization of the content, whereas they will prefer DLT when the context is such that the speaker is expected to *not* be further involved and has reasons to signal that. The seemingly illocution-dependent behavior of DLT noted in 2 and 3 (and developed into our first hypothesis) can ultimately be subsumed under the core contextual constraint we posited in our second hypothesis. However, we postpone developing this until section 6 and turn now to the experiment.

4 Experiment

In the perception experiment, participants read through 8 dialogue exchanges with blanked out spaces that anticipated certain utterances. After reading each dialogue, participants were asked to choose the utterance that is more likely to have occurred in the blank space of the dialogue that

they had just read. In each target trial, they were presented with two choices: DLT (H* !H-L%) vs. non-DLT versions (H* L-L% or L* L-L%) of a given imperative sentence. The structure of the experimental trials resembled the one adopted in Keough et al. (2016), but differed in the types of intonation and imperative content that were tested, as well as in the ways in which contextual specifications were given. More details regarding the experiment are presented below.

4.1 Materials

We included three types of imperatives as target stimuli, labelled as group 1, group 2, and group 3. Group 1 consisted of imperatives with contents that were heavily biased towards well-wish illocutions. As noted in section 3, they were hypothesized to prefer DLT.[9] Group 2 consisted of imperatives with contents heavily biased towards other illocutions (orders, offers, advice, etc.). They were hypothesized to be infelicitous when combined with DLT. Finally, group 3 consisted of imperatives that were expected to behave more ambiguously with respect to DLT: they thus included well-wish and mnemonic imperatives noted in 4 and 5. Preference for sonorants and avoidance of obstruents was another consideration in choosing the imperative sentences, but priority was given to sentences with natural content. The full list of imperatives used in the experiment is presented in Table 1.

Table 1: Sentences used in the experiment

Group	Sentences
Group 1	Enjoy your dinner! Good luck with the test! Have a nice holiday! Enjoy the movie!
Group 2	Hand in the assignment by noon! (order) Take a cookie! (offer) Avoid the highway! (disinterested advice) Take these pills for a week! (advice)
Group 3	Get well soon! Have fun at the party! Remember to feed the cats! Don't forget your lunchbox!

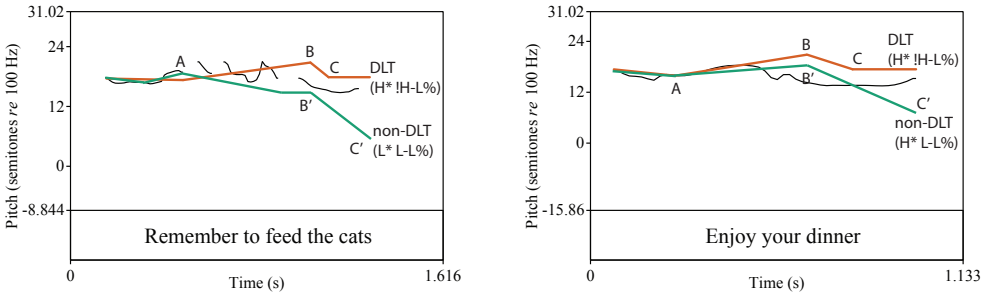
We recorded the above imperatives produced by 4 native English speakers (2 male, 2 female). During the first recording session, speakers were asked to produce the sentences as naturally as

[9] We did not include mnemonic requests in group 1, as we expected the felicity of these to be more dependent on the context; they figured in group 3 instead. We also did not include warnings, but discuss them in section 7.1.

possible. During the second session, speakers were asked to produce them in monotonous, sing-song intonation, aided by a sample production from the experimenter. The recordings from the second session were used as bases for further prosodic manipulation, whereas the recordings from the first session were used to establish criteria for manipulation, as well as assess the naturalness of the manipulated stimuli. Monotonous productions serve as suitable bases for prosodic manipulation, as they avoid being significantly biased towards one intonational configuration over the other, and prevent features, such as creaks, that would complicate prosodic manipulation (Jeong 2016).

We generated pairs of tokens (DLT vs. non-DLT tokens) from the same base recordings, using the following manipulation procedure. First, nuclear pitch accents, prenuclear pitch accents, phrase accents, and endpoints of the utterance were located. Second, new pitch values for nuclear pitch accents, phrase accents, and endpoints of the utterances were assigned: For DLT (H* !H-L%) tokens, the nuclear pitch accent (B) was 4 st. higher than the prenuclear pitch accent (A), the phrase accent (C) was 4 st. lower than the nuclear pitch accent (B), and the endpoint of the utterance had the same pitch value as the phrase accent (i.e., flat interpolation). For non-DLT tokens, the nuclear pitch accent (B′) was 2 st. lower (L* L-L%) or 2 st. higher (H* L-L%) than the prenuclear pitch accent (A), and the endpoint of the utterance (C′) was 10 st. lower than the nuclear pitch accent (B′).[10] The respective new values were posited by examining actual production patterns of DLT and non-DLT contours of 4 speakers in a pilot production experiment, as well as the first recording sessions. A visual summary of the process is given in figure 2.

Figure 2: Methods for creating two stimuli from the same base



For non-DLT tokens, we used two falling contours: the high falling (H* L-L%) and the low falling (L* L-L%) contours noted by Keough et al. (2016) in connection with imperatives. Instead of expanding the range of choices in each trial to include 3 options (H* !H-L%, H* L-L%, and L* L-L%), we paired DLT with just one non-DLT alternative for each sentence. Relying on results from a pilot production experiment as well as native speakers' judgments, we chose the non-DLT alternative that was judged more appropriate for a given imperative sentence. For imperatives such

[10]Due to space constraints, these simplify a few additional adjustments that depended on the expected values of preceding pitch accents; more detailed documentation can be found in the link in the Appendix.

as *Remember to feed the cats*, the more likely alternative was judged to be L* L-L% rather than H* L-L%. For imperatives such as *Enjoy your dinner*, neither of the non-DLT alternatives were judged to be an ideal match (as DLT was often judged to be the best match), but H* L-L% was judged to be marginally better than L* L-L% by native speakers. Therefore, the DLT token of the former was paired with L* L-L%, and the DLT token of the latter was paired with H* L-L%, as summarized in figure 2. The basic idea behind this strategy was to give the alternative intonation the best chance against DLT.

The new pitch values mentioned above were then interpolated in a linear fashion to create two tokens from each base recording. All manipulations were done in Praat (Boersma and Weenink 2015), using the built-in PSOLA manipulation program. As an added precautionary measure, the manipulated tokens were checked by 2–3 native English speakers to ensure that they were natural enough. Sample audio files of the manipulated stimuli can be found in the link in the Appendix.

Each pair of newly created stimuli was then embedded in a range of written dialogues that anticipated the imperative sentences. For the group 3 sentences that were expected to behave ambiguously with respect to DLT, each relevant answer pair was associated with two different contexts. The two contexts varied crucially in the extent of expected speaker control and future involvement. We sought to keep other dimensions of the contexts maximally comparable (e.g., same gender and names assigned to the interlocutors in the two context). The dialogues incorporated expansions of the contextual specifications exemplified in 4 and 5. Each participant was randomly assigned only one of the two available contexts associated with a given sentence in the experiment. Examples of the context pairs associated with the group 3 imperatives: *Remember to feed the cats!* and *Get well soon!*, respectively, are given in 6 and 7. Following our discussion concerning the relevant examples in section 3, the former pair varies along the extent of actual speaker control, whereas the latter pair varies along the extent of socially expected publicization of speaker control.[11]

(6) a. (Jane is talking to her house-sitter friend Amy, right before leaving home)
Jane: Thanks so much for doing this. I gotta leave now. Bye!
Amy: Okay. Safe travels.
Jane: Thanks. _____.

b. (Jane is giving out some instructions to her house-sitter friend Amy)
Jane: Thanks so much for doing this. Do you have any concerns?
Amy: Watering the plants, check. Getting the newspapers, check. Is there anything I am missing?
Jane: Yes. _____ (pointing at the cupboard). The food is in there. I will put instructions and a reminder note on the fridge.

[11] Representative samples of the stimuli paired with the two contexts in 6 can be found in the following links: non-DLT and DLT. Those paired with the two contexts in 7 can be found in the following links: non-DLT and DLT.

(7) a. (Marcus is talking to his friend Dan at school)
Marcus: Hi Dan! You've been sneezing a lot. Are you okay?
Dan: Oh yeah. It's just the allergy. Spring pollens do that to me but it's nothing serious.
Marcus: I see. Well; I gotta run to class now. _____.

b. (Marcus is talking to his friend Dan in the hospital)
Marcus: How are you feeling, Dan? I brought some flowers. When can you leave the hospital?
Dan: Thanks for the flowers. I have to stay another week to get the stitches out.
Marcus: I see. Well, I have to leave soon but I will come back in a few days. _____.

For group 1 and 2 sentences which we expected to behave less ambiguously with respect to DLT, it was more difficult to come up with naturalistic context pairs that varied along the dimension of speaker control (as we will see in section 6, certain imperative contents already seem to have strong contextual bias towards lack of or presence of expected speaker control). Therefore, only one canonical context was assigned to each of the group 1 and 2 sentences (e.g., a waiter talking to a customer in a restaurant, for *Enjoy your dinner!*), and all participants saw the same range of contexts. The full list of dialogue contexts used in the experiment can be found in the link in the Appendix.

4.2 Procedure

The experiment consisted of 8 trials: 6 target trials, and 2 filler trials. The six target trials consisted of all four group 3 imperatives (each randomly matched with one of the two possible dialogue contexts), two randomly selected group 1 imperatives, and two randomly selected group 2 imperatives (each matched with respective canonical contexts).

(8) Q1. Which of the two sounds below is better suited to be inserted in the blank space _____ in the dialogue above?
(presented with two sound clips, DLT vs. non-DLT, in random order)
Q2. How certain are you about your response to Q1?
(a 5-point scale from very uncertain to very certain)
Q3. Please type in what you heard from the first sound clip in Q1. (verification)
Q4. Please type in what you heard from the second sound clip in Q1. (verification)
Q5. Any additional comments? (Optional)

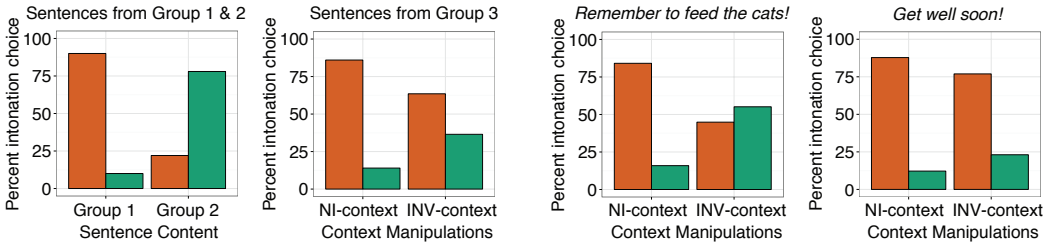
The response choices paired with each target trial were randomly chosen from two pairs of DLT vs. non DLT utterances, each pair spoken by a different speaker (one male, one female). Speaker gender and context type was counterbalanced across the experiment. The two filler trials consisted

of dialogues with blank spaces that also anticipated certain utterances. However, each filler dialogue was paired with two response choices that differed not just in their intonation (which was the case for target trials), but also in their content; participants thus had to choose the more relevant content to go in the blank space. In each trial, participants were presented with the same four questions summarized in 8. 400 native speakers of American English were recruited as participants from Amazon Mechanical Turk. The experiment lasted 10–20 minutes.

4.3 Results

Let us first examine the results for group 1 and group 2 sentences (i.e., sentences associated with only one type of canonical contexts). As we had hypothesized, content (reflecting illocutionary biases) was a significant predictor of participants' intonation choice. These results are summarized in figure 3a. The x-axis plots group 1 vs. group 2 sentences, and the y-axis plots percent response choice between DLT vs. non-DLT options. DLT options are color-coded in red, and non-DLT options (collapsing across H* L-L% and L* L-L% for ease of comparison) are color-coded in green. The graph demonstrates that group 1 sentences, such as *Enjoy your dinner!*, predominantly elicit DLT responses (higher red bar than green bar), whereas group 2 sentences, such as *Take a cookie!*, predominantly elicit non-DLT responses (higher green bar than red bar). These results were further corroborated by a mixed effects logistic regression model, with participants' choice between DLT vs. non-DLT (Q1) as the main dependent variable, sentence type (group 1 vs. group 2) as an independent variable, and speakers and participants as random effects. Content (group 1 vs. 2 distinction) was a significant predictor of intonation choice, and its effect ran in the hypothesized directions (β=3.66, SE=0.41, $p < 0.001$).

Figure 3: Summary of the experimental results



(a) Group 1 vs. 2 (b) Group 3 (c) Group 3-1 (d) Group 3-2

Legend: DLT: non-DLT:

Let us turn now to results for group 3 sentences (i.e., sentences associated with pairs of contexts). As we had hypothesized, context manipulation was a significant predictor of DLT vs. non-DLT choice, other things being equal (sentence content, speaker, etc.). These results are summarized in figure 3b. The x-axis plots contexts marked with expected *lack of* speaker control and

future involvement (NI-contexts) vs. expected *presence of* speaker control and future involvement (INV-contexts). The y-axis again plots percent response choice between DLT vs. non-DLT options, and the options are color-coded in the same way. The graph demonstrates that NI-contexts elicit significantly more DLT responses (higher red bar than INV-contexts), whereas INV-contexts elicit significantly fewer DLT responses (lower red bar than NI-contexts). These results were again further corroborated by a mixed effects logistic regression model, with participants' response to Q1 as the main dependent variable (DLT vs. non-DLT), context manipulation (INV vs. NI contexts) as an independent variable, and speakers and participants as random effects. Context manipulation emerged as a significant predictor of intonation choice, and its effect ran in the hypothesized directions (β=1.40, SE=0.01, $p < 0.001$). Given that other factors such as speakers and the content of the imperative were held constant, the significant effect of contextual manipulation strongly suggests that DLT signals, or is at least highly sensitive to, certain contextual properties.

While the results for group 3 sentences corroborate our hypothesis about the context-indexing function of DLT, the context manipulation elicited less dramatic shifts in judgments than the distinction in content (i.e., group 1 vs. 2 distinction). One possible reason for this relatively mitigated context effect can be located in the difference in the strength of context manipulations included in the experiment. Examining each case one by one, we noticed that the context manipulations we introduced for each sentence worked to different degrees. For instance, the two contexts paired with the sentence *Remember to feed the cats!*, presented in 6, did elicit dramatic shifts in participants' judgments as can be seen in figure 3c (higher red bar than green bar for NI-contexts, higher green bar than red bar for INV-contexts). In comparison, the two contexts paired with the sentence *Get well soon!*, presented in 7, elicited much less dramatic shifts as can be seen in figure 3d (the red bar (DLT) is indeed higher for NI-contexts than for INV-contexts, but INV-contexts do not flip the preferred responses to non-DLT).

The experimental results for *Get well soon!* suggest that many of the participants did *not* think that the INV-context we provided in (7b) triggers a serious ban on publicizing the lack of speaker control/involvement; even for a relatively more serious illness (speaker is hospitalized instead of having a minor allergy), the use of DLT with *Get well soon!* was licensed to some degree. A context involving an even more serious illness, or a speaker who does not leave the room right after the utterance, may have been necessary to generate stronger effects.

Although the strength of contextual manipulations differed from sentence to sentence, the high level observation to keep in mind is that all the context manipulations included in the experiment had effects in the hypothesized direction: more DLT responses for NI-contexts, and less DLT responses for INV-contexts.

4.4 Discussion

To recapitulate, the experimental results provide empirical support for our hypotheses in section 3. First, they confirm that DLT is closely associated with imperatives that have content biased towards well-wish and mnemonic request and advice illocutions, and is infelicitous when paired with imperatives that have content biased towards other illocutions such as orders, offers, etc. Second, they also confirm that the use of DLT is systematically constrained by contextual information concerning the extent of expected speaker involvement and control.

Having confirmed our generalizations noted in section 2.2 and established the empirical patterns, we now return to our initial question: what are the respective contributions of imperatives, both as sentence types and in terms of their particular content, of DLT, and of context such that the observed patterns are generated? In addressing this question, it seems worth investigating deeper the characteristics of imperatives, in order to find out why, like vocative utterances, they often become an ideal host for DLT, and why they show systematic restrictions on DLT. Their potential connections with other intonational configurations also merits a closer look. The next section presents a brief overview of these issues, in anticipation of our analysis.

5 Imperatives, illocutionary force, and intonation

5.1 Imperatives and illocutionary force

Recent work on the semantics and pragmatics of sentence types, such as declaratives and imperatives, and on the *form-force* mapping has established that the conventionally determined force of an utterance is more abstract than any particular illocutionary force. In recent analyses of imperatives by Portner (2007), Kaufmann (2012), Condoravdi and Lauer (2012), the illocutionary force of an imperative utterance is attributed in part to the conventionally determined meaning of imperatives and in part to properties of the context and pragmatic reasoning.

We focus here on the approach of Condoravdi and Lauer (2012), as their view of imperatives dovetails nicely with our ultimate analysis of DLT. Condoravdi and Lauer propose that the conventional effect of an imperative utterance is to commit its speaker to a preference for the content of the imperative to be realized. Depending on the content of the imperative and properties of the context, the activation of this core imperative convention may lead to the illocutionary inference of command, or it may instead lead to other illocutionary inferences (see Condoravdi and Lauer (2012) for details about the specific contextual conditions that license different types of illocutionary inferences).

Thus, the conventional effect ('force') of imperatives is more abstract than the specific illocutionary force. We would like the effects of intonational configurations to be captured in a parallel

fashion. In particular, we would like to see DLT as conveying some abstract information that may in turn generate a wide range of perlocutionary and social meanings depending on the context, as well as the apparent compatibility/incompatibility with certain illocutions. Before making this into an analysis, however, let us briefly examine some existing observations on the connection between imperatives and intonation.

5.2 Imperatives and intonation

Within the problem of the *form-force* mapping, a big open issue is the extent to which intonation determines the individuation of sentence types. In the domain of declaratives, this has been an active question and the answer has more or less been converging towards yes, with distinct conventions posited for falling vs. rising declaratives. In comparison, for imperatives, intonation has so far played no such role. However, recent works by Portner (2015) and Keough et al. (2016) argue that two distinct intonations may have an effect on the conventional force of imperatives.

More specifically, Portner (2015) claims that what he calls 'weak' vs. 'strong' imperatives (which correspond roughly to *may* (offers) vs. *must* readings (directives)) are distinguished by rising vs. falling tunes. Keough et al. (2016) adopt the strong vs. weak distinction as a starting point but suggest, based on experimental evidence, that the relevant distinction resides in the nuclear pitch accent and that the two contours are both falling: H* L-L% and L* L-L%. 9 and 10 exemplify the relevant split in the two accounts.[12]

(9) a. *Have a cookie!* ⇑ (Portner 2015)
Interpretation: You may have a cookie (if you want).

b. *Soldiers, march!* ⇓ (Portner 2015)
Interpretation: Soldiers, you must march.

(10) a. Context: addressee mentions that she is hungry; speaker happens to have a banana.
Have a banana! (H* L-L%; #L* L-L%; Keough et al. 2016)
Interpretation: you may have a banana (if you want).

b. Context: addressee has potassium deficiency; speaker is a parent of the addressee and orders the addressee to have a banana.
Have a banana! (L* L-L%; #H* L-L%; Keough et al. 2016)
Interpretation: you must have a banana.

Portner (2015) goes further and draws parallels between imperatives and declaratives. Inspired by Gunlogson's (2003) account,[13] he claims that rising imperatives propose to commit the addressee, while falling imperatives propose to commit the speaker, to treating the imperative's

[12] Portner uses ⇑ and ⇓ to mark rising and falling intonation, respectively.

[13] Gunlogson (2003) proposes that falling declaratives commit the speaker to the content of the declarative, whereas rising declaratives commit the addressee to that content. Gunlogson (2008) makes significant modifications to this earlier approach (see also Farkas and Roelofsen (2017)).

content as a priority. In effect, Portner is arguing that intonation fine-tunes the core effect of imperatives.

While it is not the goal of our paper to address the association between strong vs. weak imperatives and rising vs. falling or H* L-L% vs. #L* L-L% intonation patterns, the apparent parallels between the examples in 9 and 10 and our DLT examples[14] lead us to wonder whether the convention associated with imperatives is intonation-dependent. Rather, we would like to maintain that the convention for imperatives and the convention for DLT operate independently from each other, based on the following reasons. The behavior of DLT imperatives noted in 2 and 3 calls for a fundamentally different kind of illocutionary distinction that cuts across the strong vs. weak contrast. Orders (strong) and offers (weak) do not host DLT, while mnemonic requests (strong) do, but so do well-wishes, which do not fit either category. If directive uses of imperatives arise as a result of speaker commitment to a priority, and that does not come from the imperative itself, DLT would have to encode such a commitment. But since DLT is felicitous with only some directive uses, it should not do so. We will thus proceed on the assumption that the meaning contribution of DLT does not directly impact the status of the conventional effect of the imperative but rather affects other contextual conditions that are orthogonal to it.

6 Analysis

We propose that DLT imperatives call for two separate conventions that have a cumulative effect: one associated with the DLT intonation, the other associated with imperatives. We adopt the convention proposed by Condoravdi and Lauer (2012) to explain the core effect of imperatives (given in 11). We propose a new convention for DLT, by making more precise our initial hypothesis about the context-dependent felicity of DLT. The convention, given in 12, specifies that if a speaker produces an utterance with DLT, she thereby commits to the belief that the context is such that only the speaker's utterance (and not his/her subsequent actions) is relevant to the realization or non-realization of the content of the utterance.

(11) **Imperative convention**: If a speaker utters an imperative U, she thereby commits to a preference for the content of the imperative U.

(12) **DLT convention**: If a speaker utters U with DLT, she thereby commits to the belief that only the speaker's utterance (and not his/her subsequent actions) is relevant to the realization or non-realization of the content of U.

The DLT convention thus works in similar ways as the core sentence type conventions proposed by Condoravdi and Lauer (2012), in that it prescribes more abstract contextual information instead

[14] Specifically, the examples in 9 resemble our illocution-dependent DLT examples in 2 and 3, and the examples in 10 resemble our context-dependent examples in 4 and 5.

of directly prescribing specific illocutionary inferences. At the same time, it prescribes a different kind of contextual meaning from imperatives and is associated with its own meaning. While the formulation of the DLT convention can be rendered more precise, space limitations prevent us from providing the background information necessary for pursuing such a formulation. We thus characterize the convention at a more informal level, which will be shown to be able to capture all the relevant data we have discussed so far.

The two core observations that have been experimentally corroborated in section 4.3 are actually manifestations of the same underlying mechanism. In particular, DLT's preference for well-wishes and exclusion of orders and offers ultimately stems from 12. The apparent illocution-dependency of DLT is thus *not* because DLT directly specifies or affects the illocutionary force of the imperatives, but rather because DLT publicizes a certain contextual understanding of the speaker that in turn is compatible or incompatible with contextual requirements for particular illocutions (see section 7 for more detailed discussion).

To get a better grasp of how the respective conventions come into action and interact with the context, let us examine their application in the example in 2a, *Enjoy your dinner!*. The content of the imperative is that the addressee enjoys her dinner. By virtue of uttering the imperative, the speaker commits to a preference for the addressee enjoying her dinner (activation of the imperative convention in 11). By virtue of using DLT, the speaker signals that the context is such that only the speaker's utterance (and not her subsequent actions) is relevant to the realization of the addressee enjoying her dinner (activation of the DLT convention in 12).

In essence, DLT serves to signal that the speaker's future action choices are not affected by her stated preference. Given common sense, this is true in 2a, because the speaker cannot control the addressee's taste buds. It would thus be presumptuous for the speaker to assume that she can modify her future action choices in a direction that ensures the realization of the imperative content, other than uttering her preference as a well-wish. Therefore, informally speaking, *Enjoy your dinner!* with DLT ends up signaling something like: 'I would prefer that you enjoy your dinner, if you are so inclined; in having this preference that I just publicized, all I can do is offer my utterance as a well-wish; I won't presume to have further control over how your dinner experience pans out; it's up to the circumstances from now on to obtain this preferred state.' In sum, given the circumstances and the content of the utterance, DLT turns out to be well-paired with the well-wish illocution for this example, as well as having positive perlocutionary effects such as non-presumptuousness and friendly concern of the speaker.

7 Applications and advantages

Let us see how our analysis in terms of the two conventions in 11 and 12 fares with respect to the examples in 2–5, our experimental results, and data from previous work.

7.1 Influence of context

Our analysis is well-suited for capturing the context-sensitive uses of DLT (exemplified in 4 and 5 and corroborated by the experimental results for group 3 imperatives), in which imperatives with the same illocution and content either allows or disallows hosting DLT depending on the context. For instance, it can account for the distributional puzzles involving DLT and mnemonic verbs exemplified in 5: *Remember to feed the cats!*. The analysis would predict DLT to be felicitous when the context is such that the speaker has no further control over the addressee's memory and intends to mark her understanding of this contextual information, but infelicitous when the context is such that the speaker intends to actively aid the addressee's memory via further actions. It thus naturally predicts that DLT would sound felicitous when the speaker is leaving (5a and figure 3c), but infelicitous when the speaker promises to leave a reminder note (5b and figure 3c).

Similarly, our analysis accounts for the special case of well-wish we saw in 4: *Get well soon!*. Overtly marking the speaker's understanding of certain contextual information may be socially unacceptable in certain situations. It thus predicts that DLT with *Get well soon!* would be infelicitous when the addressee's illness is serious (4b and figure 3d). Although the circumstances are such that the speaker in fact has no control over the addressee's recovery, the speaker would be dissuaded from publicizing her understanding of the circumstances if it is *not* apparent that the addressee will get well in due course.

Although not directly tested in the experiment, our analysis can also explain the context-dependency of the felicity of DLT with warning uses, first noted by Ladd (1978). An adaptation of his examples is presented in 13. As mentioned in section 2.1, Ladd (1978) argues that the calling contour is felicitous with reminder warnings (e.g., 13a), but infelicitous with new warnings that call out unfamiliar dangers (e.g., 13b). He explains this using his notion of 'stylization' and claims that the calling contour is felicitous only when evoking familiar, shared routines.

(13) a. (Steps in the basement has been broken for months; the addressee knows this)
Watch out for the broken steps! H* !H-L%

b. (The addressee is a guest of the house, does not know that the steps are broken)
Watch out for the broken steps! ?H* !H-L%

Our analysis derives the observed felicity/infelicity of warnings in 13 via a different path. It would predict DLT to be generally felicitous with reminder warnings (e.g., 13a) because they

usually happen in contexts where the speaker knows that the addressee can deal with the danger by herself without the speaker having to help her via further actions (e.g., because the addressee is already familiar with ways of avoiding the danger at hand). In comparison, it would predict DLT to be generally infelicitous with new warnings (e.g., 13b) because they usually occur in contexts where the speaker is presumed to be in a position to help the addressee further in avoiding the danger (e.g., by informing her where the broken steps are).

Our analysis has broader empirical coverage and is more flexible than Ladd's (1978) stylization account, as new warnings are sometime felicitous with DLT. For instance, when it is clear that the addressee is fully capable of avoiding the broken steps by herself and when the speaker is giving out the warning from far away, *Watch out for the steps! They're broken!* sounds perfectly fine with DLT, although the latter utterance indicates a lack of addressee knowledge about the broken steps. In a similar vein, our account can also predict that reminder warnings are occasionally infelicitous with DLT (contra Ladd (1978)). For instance, when the addressee is a child and still requires close attention or help from the parent when going down the familiar broken steps, the same warning in 13a sounds infelicitous with DLT. In sum, the crucial contextual information associated with DLT does not seem to directly concern old vs. new information (Pierrehumbert and Hirschberg 1990) or familiar vs. unfamiliar routines (Ladd 1978), but rather, the extent of expected speaker involvement. Our account can derive the frequent correlation between familiarity/old routine and DLT, but can also capture cases when there is no correlation between the two.

7.2 Uses that support DLT

As pointed out in our discussion of *Enjoy your dinner!* in section 6, our analysis can capture why DLT occurs predominantly with well-wish imperatives and mnemonic imperatives (2 and figure 3a). These are generally cases that are characterized by lack of speaker future involvement, because in these cases, circumstances prevent the speaker from having action-related control over the stated preference. In conjunction with people's typical assumptions about other people's tastes (*Enjoy your dinner!*), personal experiences (*Have a nice trip!*), and memory (*Don't forget your lunchbox!*), namely, that the speaker cannot presume to have any control over them, and that it may even be polite to mark this non-presumption, our analysis predicts DLT to be well-paired with well-wishes and mnemonic requests and advice, thus capturing the patterns observed in 2 and figure 3. In sum, illocutions of well-wish and mnemonic request or advice (as well as contents that are biased towards such illocutions) standardly occur in circumstances where the speaker cannot have control over the realization of the stated well-wish or request/advice. Such circumstances often prompt the speaker to customarily mark her understanding of them as a way of signaling casual politeness or non-presumptuousness.

7.3 Uses that don't support DLT

Our analysis can also explain why DLT often sounds infelicitous when combined with other uses of imperatives, such as orders, offers, non-mnemonic requests and advice. This is because all of these illocutions standardly presume some amount of speaker control or future involvement. For instance, speaker action is standardly anticipated for offers (e.g., presenting a plate of cookies upon uttering *Take a cookie!*). The case of offer is interesting because it has similar perlocutionary effects as a well-wish (in many cases, both signal friendly concern and politeness) but doesn't allow for DLT. This state of affairs is easily explained using our account, but other accounts have been shown to have difficulty in predicting the infelicity of the former (section 2.1). For orders as well, speaker action is not precluded. After all, if a speaker has the authority to issue an order to the addressee, she can always sanction the addressee for not fulfilling the order; the speaker thus has a reason to *not* overtly signal that her control/action stops with the utterance.

Similarly, in advice uses speakers are standardly expected to leave the door open for their possible future involvement. For instance, if a doctor utters *Take these pills for a week!* to a patient, the context is usually such that the speaker (i.e., the doctor) has the authority to do something further to ensure that the addressee will take the pills for a week. Even if the doctor does not privately intend to do anything further to bring about this content, she would not be motivated to overtly signal this, as doing so would end up marking a lack of authority (thereby undermining her position as a person in charge) and/or a lack of genuine concern for the patient. Or, if someone gives out the following piece of advice: *Avoid the highway!*, the context is usually such that the speaker is expected to give out further information that will help in bringing about the content upon a clarification request from the addressee (e.g., the speaker may add: *You can take the boulevard instead.*). In sum, since the speaker is presumed to be more knowledgeable about the matter at hand than the addressee, and is presumed to be cooperative, she needs to act as though she is invested further and could provide more information. This prevents the speaker from publicly signaling that the circumstances are such that her involvement towards realizing the stated preference stops with the utterance.

For all of these imperative illocutions that have been hypothesized to be infelicitous with DLT, our analysis can also predict that they could become felicitous if they function as reminders (e.g., reminder offers, reminder orders, and reminder advice). Reminders often happen when the speaker has already performed actions that are considered to be relevant to bringing about the content of the imperative and thus wishes not to do anything further other than to remind the addressee of the speaker's previously stated preference (i.e., the ball is now in the addressee's court to obtain that preference). For instance, *Have the report on my desk by noon!* may be felicitously paired with DLT if the speaker had already asked for the report to be delivered to her by noon. Such an

observation is in line with Ladd's (1978) observation about reminder warnings, although as shown earlier, the way we capture this observation is different from his.

7.4 Perlocutionary and social meanings of DLT imperatives

In addition to predictably deriving the felicity/infelicity patterns of DLT imperatives, our analysis can also derive the range of social and perlocutionary meanings often associated with them. We expect these meanings to be generated from the interaction between our core DLT convention posited in 12 and diverse contents and contexts. Flavors such as lack of urgency, nonchalance, finality, friendliness, politeness, and casualness are inferences that further arise given the activation of 12 in the right context. While the former two often accompany DLT paired with warnings, the latter four often accompany DLT paired with well-wishes or mnemonic requests. In contexts in which warnings are used, publicizing that the context is such that there will be no further speaker involvement, often ends up signaling nonchalance and lack of urgency (i.e., the addressee can take care of herself). In contexts in which well-wishes and mnemonic requests are used, publicizing the speaker's understanding of the same kind of contextual information ends up signaling friendliness and casualness, given assumptions people make about other people's experiences and memories (section 7.2).

7.5 Absent wishes

We noted that the felicity or the infelicity of a DLT imperative does not depend solely on whether the context in which it is uttered is marked with lack of speaker control in realizing the content of the imperative; it also depends on whether the speaker has a reason to publicly signal such contextual information. In sum, the felicity/infelicity of DLT is computed not just via checking whether the contextual information signaled by DLT aligns with, or is in conflict with the state of the world, but also via reasoning about the speaker's intentions. This assumption can explain why DLT is infelicitous for a special case of wish imperatives, namely, imperatives without an addressee present, called absent wish imperatives. An example of this use is given in 14.

(14) (Speaker muttering to herself)
Oh please, don't have broken another glass! #H* !H-L%

Even though 14 is characterized by a context in which the speaker cannot control the realization of the content (i.e., that the (absent) addressee has not broken another glass) as she is away from the situation, she also has no motivation to publicly signal this contextual assumption at the moment of the utterance, as the addressee will not hear her (and interpret the speaker's intention underlying her use of DLT).

7.6 Back to the calling contour

Our analysis highlights the usefulness of examining the systematic pairings between DLT and imperatives in coming up with a more adequate construal of DLT, a.k.a., the calling contour. The cases we have examined so far demonstrate that the current analysis of DLT captures the examples of DLT imperatives better than previous approaches to the tune. Going back to the initial data of interest, however, can our analysis of DLT be generalized to non-imperative examples such as vocative and phrasal utterances which previous work has focused on? Since we argue that the DLT convention operates independently of the imperative sentence-type convention, we would expect the same DLT convention to apply to the existing examples as well. This prediction holds as long as we make one additional assumption. In the case of vocatives and phrasal utterances, the content that DLT latches onto isn't just the entity denoted by the phrase, but rather a contentful proposition. In the case of imperatives, this proposition was the literal content itself. In the case of vocatives, the relevant content needs to be reconstructed from the phrase that hosts the DLT and the context. We expect this to be predictably reconstructed by locating a salient goal including the uttered phrase in the context. (See Truckenbrodt (2012) for a similar approach to vocative uses of the calling contour.)

For instance, in the case of *Jacob! Your lunch!*, the content that DLT latches onto isn't just the denotation of the name 'Jacob', or of the phrase 'your lunch'; it is rather the salient goal that Jacob comes to lunch. Given this content, the DLT convention we posited in 12 applies straightforwardly, and the speaker thereby signals that all she will do in bringing about this content is to call Jacob; she will not take additional efforts of running up the stairs and fetching Jacob in person, for example. In other words, the speaker is conveying that only the speaker's utterance (and not her subsequent actions) is relevant to the realization of Jacob coming to lunch. The analysis can thus explain the requirement for physical distance often associated with the calling contour with vocatives (Fox 1969). If the speaker had the intention of actively reducing the physical distance between her and the addressee (via running towards that person) or were next to the addressee from the beginning, she would not be motivated to signal that all she will do in summoning someone is to utter her name.

Such a line of explanation also explains why DLT is infelicitous when calling out real emergencies, as in *Fire!*. Assuming that the reconstructed goal is escaping the danger posed by the fire, the speaker would not want to publicly signal that the speaker cannot or will not adjust her subsequent actions to realize this goal. Given the urgency of the situation, the speaker is standardly expected to call the fire department, go around and warn the people, or at least publicly act as though she can be of help in escaping the danger.

7.7 DLT with declaratives

As in the case of phrasal and vocative examples, we expect the same DLT convention to apply to DLT combined with full declarative sentences, as in 15.

(15) *You can try. But he's not going to hear you.* H* !H-L%

Just as in the vocative examples, an additional assumption concerning the reconstruction of the salient goal seems to be needed. For instance, in the case of 15, the speaker seems to be conveying via DLT that only her utterance is relevant to the realization or non-realization of the salient goal that the person referred to as 'he' hears what the addressee has to say. Again, we expect this salient goal to be predictably derived from the content of the declarative and the context, but postpone giving out more details about this process.

The inferences associated with 15 suggest that DLT with a declarative creates different shades of illocutionary and perlocutionary effects from DLT with imperatives. Whereas the former usually maps onto illocutions of admonitions or advice, and generally signal rather negative perlocutionary effects such as detachment or offhandedness, the latter often maps onto illocutions of well-wishes or mnemonic requests, and signal positive perlocutionary effects such as friendliness and non-presumptuousness.

Our analysis can capture this observed difference in perlocutionary flavor without needing to resort to additional stipulations. Our DLT convention is purposefully underspecified as to why exactly the speaker may want to publicly signal that the context is such that only her utterance is relevant to the realization of the salient goal (which is equivalent to the content, in the case of imperatives). It may either be because the speaker *cannot* adjust her future action choices in a way that facilitates the realization of it (because circumstances prevent the speaker from having control over it; as in the case of well-wishes), or because the speaker *will not* adjust her future action choices (because the speaker is too busy to bother, for instance) in a way that facilitates the achievement of a salient goal, other than to utter an offhand advice.

In many declarative examples such as 15, the motivation is more likely to be the latter, hence the flavor of offhandedness. In imperative examples (not all of them, but definitely for well-wishes), the motivation is more likely to be the former, hence the flavor of non-presumptuousness and friendliness. Given the space constraints, we will not discuss in more detail why different contents, contexts, and sentence types push the likely motivation of the speaker towards *cannot* vs. *will not*. Ultimately, the answer has to do with what the relevant sentence type conventions are and what contextual conditions are needed to license different types of illocutions.

8 Conclusion

In this paper, we probed the meaning contribution of an unusual intonation, DLT (H* !H-L%), by studying its systematic interaction with imperative clauses. We demonstrated experimentally that (i) DLT is compatible with certain imperative illocutions but incompatible with others, (ii) this distinction cuts across the traditional illocutionary boundary posited for imperatives, and (iii) the felicity/infelicity of DLT paired with compatible illocutions further depends on contextual information relating to speaker control and involvement in bringing about the content of the imperative.

We argued that although at a superficial level intonation can be taken to signal certain illocutions, the case of DLT with imperatives shows that intonation can be associated with its own convention of use, making no reference to sentence-type or illocutionary force. However, depending on the sentence-type, the content and the context of the utterance, use of DLT can lead to further inferences which make it appear compatible or incompatible with particular illocutions.

We have proposed that the intonation does not play a role in further individuating the imperative sentence type, and therefore, that the sentence type and intonation are each associated with their own independent conventions. The imperative convention and the DLT convention apply cumulatively to a given imperative content, and interact with diverse contexts to generate the observed compatibility/incompatibility with certain illocutions, as well as a range of perlocutionary and social effects.

9 Appendix

Link to the full data and the actual experiment (including all the sound files) can be found at: `https://github.com/sunwooj/dltimperatives`

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