

Y'know vs. *you know*: What phonetic reduction can tell us about pragmatic function

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1 Introduction

The phonetic reduction of words is a frequent phenomenon in spontaneous speech: many words are realized with fewer or lenited segments when compared to their citation forms (e.g. Ernestus & Warner, 2011; Johnson, 2004). Several factors have been shown to influence these reductions: lexical characteristics like word frequency (e.g. Bell, Brenier, Gregory, Girand, & Jurafsky, 2009), contextual factors like a word's transitional probability (e.g. Bell et al., 2009), its position within the utterance and the presence of surrounding disfluencies (e.g. Bell et al., 2003), or overall speech rate (e.g. Ernestus, 2014), as well as speaker characteristics such as age and gender (for an overview, see Ernestus, 2014).

A particularly interesting scenario arises when the same lexical item is reduced to differing degrees depending on its pragmatic function. For example, Bybee and Scheibman (1999) report that the item *don't* in the phrase *why don't you* is reduced when the phrase is used for making a

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suggestion, but appears in its full form when used in an actual question. Similarly, Local (2003) compares the phonetic realization of the construction *I think* in its lexical sense to those realizations where the same construction is mainly used for pragmatic purposes, i.e. as a discourse marker, the latter realization being substantially reduced. It appears that the more pragmatic and the less lexical or compositional a given item is, the more it will be reduced. Speakers may exploit the reduced vs. the full realization of these words or collocations to indicate which of the possible meanings they intend; even fine phonetic detail may thus contribute to the construction of meaning (Local, 2003). However, so far only a very limited number of items have been investigated, and it is unclear whether what Local found for the different realizations of *I think* also holds for other, similar items. Additionally, the precise nature of the reduction is uncertain. Local (2003, p. 327) reports the lenition of segments, affecting both consonants and vowels, as well as the fact that the discourse marker usage of *I think* is “usually shorter” than the lexical forms. However, it is unclear on how many instances Local’s observations are based and how the two different usages of *I think* are distributed, hence generalizations beyond the individual case are difficult to make.

One further factor that has not been taken into account systematically in the investigation of phonetic reduction is the syntactic environment in which a given item occurs. Bybee and Scheibman (1999) observe that the reduction of *don’t* depends on the immediate environment, i.e. the words immediately preceding and following the item. However, larger and more abstract syntactic units, such as e.g. clauses, potentially also have an impact on the phonetic realization of words or constructions. Indications that this might be the case come from research by Tily et al. (2009): In a corpus of spontaneous speech, they found that single lexical items which occur in more probable syntactic constructions are more reduced than items which occur in less probable constructions (here: dative alternation in English). Whether this finding generalizes to less specific types of syntactic units and to constructions beyond the single word, and whether this interacts with the pragmatic function of a given item, remains to be investigated.

An example of a construction that has both a literal and a discourse

marker meaning is the collocation *you know*. In its lexical or compositional sense, *you know* is part of the syntactic structure of the clause it appears in and is as such obligatory. In its pragmatic, potentially non-compositional usage *you know* functions as a discourse marker, often spelled ‘yknow’ in informal written communication, reflecting the frequent reduction it undergoes in spoken language. When used as a discourse marker, *you know* is grammatically optional and may have a number of different functions, ranging from signaling lexical or content search over introducing an explanation to appealing to the acknowledgment of the interlocutor (cf. Müller, 2005).

We chose to use the collocation *you know* as our unit of analysis in order to address the following research questions:

1. Is the discourse marker *you know* phonetically reduced when compared to its non-discourse marker counterpart?
2. If so, how is this reduction characterized – by the lenition of segments or by the shortening of duration or by both?
3. Does the syntactic environment in which the collocation *you know* occurs have an impact on its realization?

Based on the findings summarized above, we expected *you know* used as a discourse marker to be reduced when compared to its compositional counterpart, both in terms of duration as well as in terms of the lenition of segments. As the syntactic environment as a potential factor influencing reduction has not been systematically investigated, this part of the project was strictly exploratory and no predictions were made.

2 Materials and Methods

2.1 The corpus

We used the Buckeye Corpus of Conversational Speech, which was collected at the Ohio State University in late 1999 and early 2000 (see Pitt, Johnson, Hume, Kiesling, & Raymond, 2005). The corpus contains approximately 300,000 words from 40 native Ohio speakers. The sample was stratified for age and sex, and the sampling was limited to middle-class

Caucasians. Speakers were recorded during an interview session on everyday topics such as politics, sports, traffic, or schools; sessions lasted between 30 and 60 minutes.

The corpus comes with an orthographic transcription and a phonetic labeling. The orthographic transcription was produced manually. The transcribers were explicitly instructed to use ‘special spellings’ for a number of frequent collocations, among which *you know*: “yknow (as in ‘I found, yknow, a lot more mistakes’ but not ‘how do you know?’)” (Kiesling, Dilley, & Raymond, 2006, p. 8).

2.2 Classification and annotation

We extracted all instances of ‘you know’ and ‘yknow’ from the corpus, thereby obtaining 462 and 1880 cases respectively. We extracted an orthographic transcription of our target construction surrounded by a context of 10 words to both left and right. These extracts were classified according to whether they constituted instances of the discourse or non-discourse marker use of the construction, the clause type the construction appeared in, as well as the discourse marker’s position within the clause. These steps will be described in more detail in the following sections.

2.2.1 Pragmatic meaning vs. literal meaning

As mentioned in the previous section, transcribers were explicitly instructed to transcribe the discourse marker uses of *you know* as ‘yknow’. However, as it turned out during our inspection of the data, a majority of the items transcribed as ‘you know’ were in fact also instances of the discourse marker usage of the construction (298 out of the total 462). In order to differentiate the two uses, the criterion proposed by Müller (2005) was applied: if the construction was syntactically obligatory it was considered to be an instance of its literal usage, if not, it was classified as a discourse marker. Ambiguous cases, which could not be classified based on the orthographic transcription alone we attempted resolve by listening to the corresponding sound files. Here, prosodic features were

the strongest cue to the identity of the construction.¹ If this still did not yield an unambiguous categorization of the construction, we excluded it from further analysis.

2.2.2 Clause types

For the syntactic categorization of the context in which the construction appeared, we decided to use the clause as our basic unit of analysis. The distinction we used was essentially that between main clauses and dependent clauses. For main clauses we differentiated between declarative, interrogative, imperative, and negative clauses. For declarative clauses the following word order options were coded: unmarked, cleft, existential, and extraposed. For interrogative clauses, we distinguished between yes/no questions with and without the auxiliary *do*, *wh*- questions, and tag questions. For the dependent clauses, we distinguished between finite and non-finite clauses. For the finite clauses, we distinguished between relative, zero-relative, subordinate, and zero-subordinate clauses. As it turned out during the classification process, only main clauses with unmarked word order, *yes/no*-questions, and zero- and full subordinate and relative clauses occurred in sufficient numbers to allow for statistical modeling.

2.2.3 Position within clauses

Only the instances of *you know* used as a discourse marker were further categorized according to their position within the clause. There are three possible positions: clause-initial, clause-internal, and clause-final. The marker was considered to appear clause-initially if it occurred in the first free slot available. In main clauses, this meant before any obligatory constituent, with additional coding for whether the marker occurs in the very first position (e.g. *you know I think so*) or in a subsequent position

¹Note that when classifying the collocation on the basis of its pronunciation, there is the risk of circularity. Since we focus on the feature 'reduction' in our analysis, care was taken that the only criterion used to classify the collocation other than syntactic factors were intonation, i.e. durational reduction and segment lenition were ignored as far as that is possible.

(e.g. *and well you know I think so*). For dependent clauses, a distinction had to be made for relative and subordinate clauses with and without a relative pronoun or subordinating conjunction. For those with a relative pronoun or subordinating conjunction, the marker was considered to occur clause-initially if it appeared right after the relative or subordinate pronoun (e.g. *because you know when you're younger*). For zero-relative and zero-subordinate clauses, the initial position was right at the very beginning of the clause (e. g. *I think you know we should have every option available*).

The marker was considered to occur clause-internally if it appeared between any obligatory constituents.

Finally, *you know* was categorized as occurring in clause final position if it occurred at the very end of a main or dependent clause.

Ambiguous cases, in which the marker could not be assigned to any clause in particular, were excluded from further analyses.

2.2.4 Prosodic phrase boundaries

In addition to identifying the syntactic clauses in which the target items occurred, we also marked the prosodic phrase boundaries. This unit was used later on to determine the local speech rate. It is assumed that for English, syntactic clauses and prosodic boundaries generally coincide (Croft, 1995). However, this was not our impression of the present data. Therefore we coded the prosodic constituents independently rather than assuming them to be identical with the syntactic boundaries established in the previous step (see 2.2.2). As there are no objective guidelines on how to determine where the prosodic boundaries are, all judgments of prosodic boundaries are based on the first author's non-native speaker intuition.

Identifying the type of prosodic constituent for the literal cases was fairly unproblematic, as the construction was always part of a bigger intonation phrase. For the discourse marker, it was often much harder to identify the type of prosodic constituent. In most cases, it appeared that the marker constituted its own intonation contour. In those cases, boundaries were indicated by

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- final lengthening of the word preceding *you know* or *you know* itself
- sudden pitch rise or fall after *you know*
- clear pauses before or after *you know*

Since there was this clear bias towards labeling *you know* as its own prosodic constituent, the preceding and following intonation phrases were also marked for the sake of local speech rate determination.

2.2.5 Final data selection

In addition to the cases mentioned in the previous sections, several items were excluded beforehand from the analysis. Those included fragments, i.e. utterances that were acoustically incomprehensible, utterances which included a great number of false starts and repairs which rendered them incoherent and semantically incomprehensible, utterances which were interrupted by the interviewer, clauses or constructions which could not be categorized within our scheme including mere phrases, as well as stretches of speech which contained an error in the transcription, or occurred right at the end or the beginning of the recordings. Also excluded were the usage of *you know* in the two constructions *you know what* and *you know what I mean*, as they were judged to be constructions in their own right and not representative of the usage of *you know* in its literal meaning. Furthermore, we excluded those clause types which occurred too infrequently for use in a statistical analysis. This left us with a total of 62 instances of *you know* used with its literal, compositional meaning, and 400 instances of *you know* used as a discourse marker.² From this, we made our final selection of 299 cases, thus including all 62 literal uses as well as 237 discourse marker uses selected at random from the 400 instances (see Table 1).³ As zero-relative and zero-subordinate clauses occurred in rather limited numbers, we decided to collapse the subgroups,

²The small number of instances of the literal meaning are most likely due to the fact that the data included in the corpus are of a monologic rather than a dialogic character, i.e. the conversational partner (the interviewer) is rarely addressed directly.

³This odd number of discourse markers we selected (237) is due to the fact that initially, we had 63 instances of the literal meaning (one instance included by mistake) and wanted the full dataset to be a round number (i.e. 300).

Table 1: Selected instances of *you know* with their respective number of (“No.”) occurrences per clause type

Clause type	No. occurrences literal meaning	No. occurrences discourse marker
Main clause (unmarked word order)	22	133
Yes/no question	17	-
Zero-subordinate clause	1	27
Subordinate clause	16	56
Zero-relative clause	4	2
Relative clause	2	19

hence combining zero-relative clauses and relative clauses into one group, and zero-subordinate clauses and subordinate clauses into another.

2.3 Analysis

We analyzed our data using mixed-effect models implemented in the statistical package R (R Development Core Team, 2007) by using the `lmer` function included in the `lme4` library (Bates & Sakar, 2009). Mixed-effect regression modeling is used when there are a number of different factors, both fixed and random, that may have an effect on a dependent variable. Regression models are constructed which account for the variation in the dependent variable in terms of a linear combination of the explanatory variables (see e.g. Bell et al., 2009). Once a basic model with significant explanatory variables is established, further factors are added stepwise to the model to test whether they make an additional contribution to predicting the behavior of the response variable. This is assessed by comparing the goodness of the fit of one model to that of another (as measured by the Akaike Information Criterion (AIC) which corrects for model complexity, see Field, Miles, & Field, 2012). Based on the previous research summarized in the introductory section and our observations during the classification process, we selected a number of factors that we deemed

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likely to influence the phonetic realization of our target *you know* to be used in the regression analysis:

- the *status of the construction*, i.e. whether it was used as a discourse marker or with its literal meaning;
- the *local speech rate*;
- the *age and gender of the speaker*;
- the *word preceding* and the *word following the collocation*, including their *duration* and their *absolute and relative frequencies* in the corpus;
- the *presence vs. the absence of a pause following the collocation*;
- the *clause type* and the *position within clause* (the latter only for tokens classified as instances of the discourse marker).

As for dependent measures, we selected:

- the overall *duration* of the target *you know* measured in seconds;
- the *number of segments*;
- the *quality of the segments* (see section 3.3);
- the *duration of the individual segments*.

Most of this information (except for the clause type classification, and the age and gender of the speakers) were extracted and/or computed from the transcription that accompanied the corpus.

For the local speech rate computation within the intonation phrases we used vowels to approximate syllables, i.e. the number of vowels was taken as the number of syllables; the duration of the target *you know* was subtracted from the total duration of the intonation phrase; this was then divided by the number of syllables counted minus the two syllables of *you know*. As the local speech rate differed significantly for the two levels of our predictor status of the construction, $t(79.8) = 5.477$, $p < .001$, in our analyses we replaced speech rate by the residuals of a linear regression model predicting speech rate as a function of status. For the sake of simplicity, we keep referring to the factor as speech rate.

The absolute and relative frequencies of the words preceding and following the collocation were retrieved via a frequency list of the full Buckeye corpus.

Pauses, including silences and vocal noise, transcribed as <SIL> and <VOCNOISE> respectively, were contained in the variables preceding word and following word.

The types of segments contained in the target collocation *you know* and their individual durations were extracted from the phonetic transcription provided in the corpus.

3 Results

3.1 Duration of *you know*

We first investigated the effect of our various predictors on the duration of *you know*. Throughout the entire analysis speaker was treated as a random factor. The results of the whole dataset (N = 295, 4 cases excluded as outliers) are presented in Table 2. We found a significant main effect for the presence of a pause following the collocation. There were no main effects of the status or speech rate. Nor did we find any effects of clause type, or of pauses preceding the collocation (in all cases $p > 0.1$). Importantly however, we did find significant interactions between status and speech rate, and between status and the presence of a following pause. This suggests that *you know* as a discourse marker and *you know* in its literal sense are affected differently by our predictors. Hence we split up the dataset according to status in order to analyze them separately.

The analysis of the discourse marker *you know* (N = 234, 3 cases excluded as outliers) showed that the only significant main effect was for the presence of a following pause, meaning that if followed by a pause, the discourse marker was realized with a slightly longer duration (see Table 3). There was no effect of speech rate ($p > 0.1$). Again, there was no effect of clause type ($p > 0.1$). Furthermore, there was no effect for position within the clause, a predictor that was coded only for the discourse marker ($p > 0.1$).

For the literal meaning of the collocation (N = 61, 1 case excluded), there were two significant main effects, for the presence of a following pause and for speech rate, see Table 4. Hence, the literal usage of *you know* was realized with longer durations when followed by a pause just as

Table 2: Estimates and t-values of the effects for the predictors status, speech rate, and presence of following pause on the duration of *you know*, N = 295

Predictor	Estimate	t-value
Status: literal meaning	-0.015800	-1.084
Speech rate	-0.006992	-1.440
Presence of following pause	0.077636	6.386
Status: literal meaning * speech rate	-0.023231	-3.062
Status: literal meaning * presence of following pause	0.086967	2.426

the discourse marker usage: however, the size of this effect was larger for the literal usage, hence the interaction in the main analysis. Unlike the discourse marker, the compositional meaning's duration is also sensitive to speech rate such that the higher the speech rate, the shorter the duration. When including clause type as a factor in the model, we found that *yes/no*-questions differ significantly from the unmarked declaratives, indicating that *you know* is realized slightly shorter in *yes/no*-questions. However, including this factor decreased the overall goodness of the model's fit as measured by the AIC.

From these results we conclude that, contrary to our predictions, the discourse marker *you know* is not generally realized with shorter durations than its non-discourse marker counterpart. Only the duration of the compositional meaning was significantly affected by the speech rate (the higher the speech rate, the shorter the duration), while there

Table 3: Estimate and t-value of the effect for the predictor presence of following pause on the duration of the discourse marker *you know*, N = 234

Predictor	Estimate	t-value
Presence of following pause	0.077698	6.841

Table 4: Estimates and t-values of the effects for presence of following pause and speech rate on the duration of the literal meaning of *you know*, N=61

Predictor	Estimate	t-value
Presence of following pause	0.156574	3.641
Speech rate	-0.033260	-4.660

was no such effect on the duration of the discourse marker (see Figure 1). Both uses were similarly affected by the presence of a following pause such that the duration of *you know* was slightly longer if it was followed by a silence or vocal noise, although this effect was more pronounced for the literal usage (see Figure 2).

3.2 Number and duration of individual segments

Next, we tested whether the number of segments or the duration of the individual segments were affected by the status of the collocation. However, this was not the case, as might be expected since status did not have any impact on the overall duration of *you know*.

3.3 Quality of individual phonemes

We then went on to look at the realization of the phonemes as a dependent variable. We judged that the realization of the full vowel /u/ could be contrasted with more reduced realizations such as /i/ or /i/ (in the Buckeye phonetic alphabet transcribed as 'uw', 'ih', and 'iy', respectively). Similarly, the realization of the clear nasal can be contrasted with the nasal flap (transcribed as 'n' and 'nx', respectively).

For the presence vs. the absence of the full vowel 'uw', we again analyzed the whole dataset (N = 299), see Table 5. There was a significant interaction of status and age, while these predictors show no simple main effects (in both cases $p > 0.1$). From these results we conclude that younger speakers generally realized the discourse marker more often with a reduced vowel than older speakers did. Both age groups were more likely

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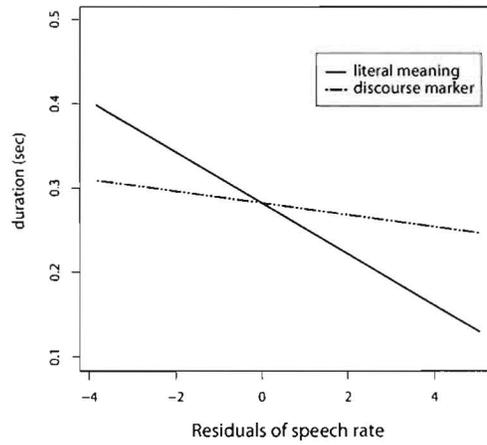


Figure 1: Interaction effects for status and speech rate on duration

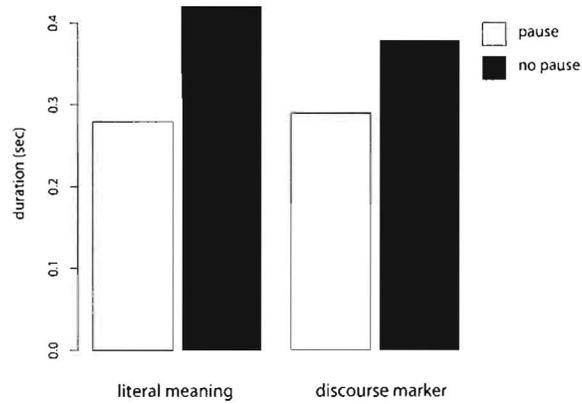


Figure 2: Interaction effects for status and presence of following pause on duration

Table 5: Estimates, z-values, and corresponding probabilities of the effects for status and age on the presence of the full vowel 'uw', N = 299

Predictor	Estimate	z-value	Pr (> z)
Status: discourse marker	-0.5635	-1.450	>0.1
Age: young	0.8654	1.516	>0.1
Status: discourse marker * age: young	-2.4576	-3.381	<0.001

to use the full vowel for the literal meaning of the collocation than for the discourse marker, but this effect is more pronounced for the younger speakers, see Figure 3.

Table 6 presents status as the only significant predictor for the presence vs. the absence of a clear nasal 'n'. Hence, the discourse marker is much more frequently realized with the nasal flap 'nx' than the non-discourse marker, regardless of the age of the speaker or other variables (as illustrated by Figure 4).

3.4 Discussion of results

It is highly interesting to see that the pragmatic status of the construction, i.e. whether it functioned in its compositional, literal sense or as a discourse marker, did not have a significant effect on its duration or on the number of segments it was produced with. Rather, what distinguished the two versions of the construction was the lenition of the segments. Speakers tended to realize the discourse marker more often with a reduced than with a full vowel, although this effect was more pronounced

Table 6: Estimate, z-value, and corresponding probability of the effect of status on the presence of the clear nasal 'n', N =299

Predictor	Estimate	z-value	Pr (> z)
Status: discourse marker	-2.0083	-5.757	<0.001

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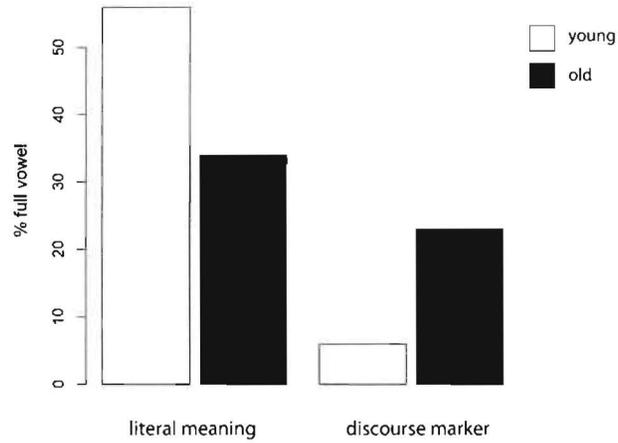


Figure 3: Interaction effects for status and age on the presence of the full vowel 'uw'

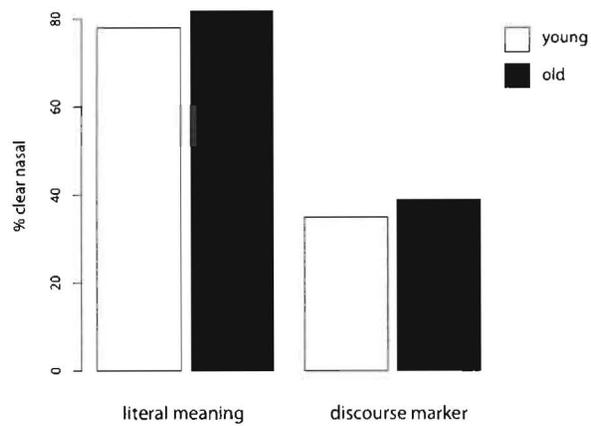


Figure 4: Effects for status and age on the presence of the clear nasal 'n'

for younger than for older speakers. Regardless of age, the literal form was more often realized with a clear nasal than the discourse marker, which in return comprised more nasal flaps. In the literature on discourse markers, phonetic reduction is not one of the most prominent features listed, and if it is mentioned, then it is without further specification (cf. Müller, 2005). Local (2003), in his comparison of the realization of the collocation *I think* notes that the discourse marker forms are realized with lenited segments for both consonants and vowels, but also that they are usually shorter than the literal or 'lexical' forms, something we could not replicate here.

The fact that the local speech rate only had an impact on the duration of *you know* in its literal sense but not on the duration of the discourse marker is, at first sight, somewhat surprising. However, during the process of defining the prosodic boundaries we saw that more often than not, the discourse marker must be considered as its own intonation phrase. It is highly plausible that the duration of *you know* as a fully compositional syntactic construction which is integrated into the local context both prosodically as well as syntactically should also be affected by the local speech rate, while the same is not true for the discourse marker, which is much less integrated into the surrounding context.

The fact that none of the syntactic categories we established (with the exception of *yes/no*-questions) had any impact on the realization of the construction is somewhat disappointing, considering the amount of work we put into the development of classification schemes and into categorizing the instances. As far as the clause types are concerned, the finding might be somewhat expected. Although it is intuitively true that in many cases, subordinate or relative clauses sound differently when compared to simple main clauses or questions, this difference is in large part due to different intonation patterns. Also, as we have seen in our data, the majority of utterances were categorized as simple statements with unmarked word order. More complex syntactic constructions as they appear in written language are rather rare in spontaneous conversational speech. Additionally, what we classified as relative or subordinate clauses, based on the presence of relative or subordinate pronouns or the overall syntactic structure of a given stretch of an utterance, are used very differently in spontaneous informal spoken language from the way they are

employed in written language. They are frequently used as statements and have none of the parenthetical character they are associated with in written language. It should also be kept in mind that it was often rather difficult to integrate the discourse marker *you know* into those traditionally defined syntactic structures. As it does not have any of the properties of the traditional word classes such as nouns, verbs, adjectives, etc., it is very difficult to assign it to any of the predefined slots in the syntactic structure. All in all, it might simply be the case that the traditional syntactic categories we used in our analysis were not very useful for characterizing spontaneous spoken language, and therefore do not provide a sensitive or adequate measure. It is unclear whether the notion of a clause is not a too abstract one, and whether speakers indeed generalize over different instances of e.g. subordinate clauses in order for this to have an impact on their phonetic realizations of words or constructions contained in these clauses.

The finding that the position of the construction within the clause did not have any impact on its realization is somewhat more surprising. It is generally assumed that clauses and intonation boundaries coincide (e.g. Croft, 1995). In analogy to the finding that the initial and final words in an intonation phrase are less reduced when compared to those in medial position (e.g. Bell et al., 2003), we expected that the position within the clause would have yielded similar results. However, since our analysis of syntactic position only included the position of the discourse marker and not that of the construction in its literal sense, this result may again be explained by the finding that discourse markers mostly form their own intonation contours. This, and the fact that there were very few instances to begin with, may also account for the absence of any effect of whether the marker occurred clause or phrase-internally, or preceded a rephrasing or repetition.

4 General discussion and conclusion

In this section, we would like to address the question of why discourse markers are realized with lenited segments when compared to their lexical counterparts, why this reduction is more pronounced for younger than

for older people, and why it potentially has implications for the syntactic status of discourse markers.

We would like to propose that the basic force behind the reduction of *you know* as a discourse marker is frequency. It has been observed (also in the present corpus) that the collocation in its discourse marker sense occurs extremely frequently, and it is a well-established finding that more frequent words undergo more reduction than less frequent words (e.g. Bell et al., 2009). The same is true of more frequent collocations (e.g. Bybee & Scheibman, 1999). The finding that younger speakers use the reduced form more often than older ones is possibly connected to the fact that the collocation *you know* is used more frequently in its discourse marker sense in the speech of younger generations. Out of the total number of *you knows* produced by younger speakers, only 18% were instances of the literal meaning, compared to 28% for the older speakers. It might additionally be the case that older speakers are more conservative in their pronunciation. One might ask whether the reduction of *you know* based on its frequent occurrence should not spill over to the realization of its non-discourse marker counterpart. And indeed, if the two uses of the collocation were indeed identical, i.e. assembled from the same lexical items, there should not be such a difference. We therefore propose that the two are not identical, and while the compositional usage of *you know* may indeed (in most cases) be assembled from the lexicon, the discourse marker is stored as one single unit and also processed as such, i.e. it is never fully analyzed nor fully analyzable. Bell et al. (2009, p. 101) similarly suggest that “many collocations can be retrieved from the lexicon either as word sequences or as single entries”. This is not to say that this distinction is categorical and that there are no gradients in between. For example, we propose that a construction such as the question *do you know* is also more tightly integrated as a constituent, which is indicated by its slightly shorter durations compared to when it occurs in statements.⁴ We further propose that what might have originally been a reduction driven by frequency and ease of articulation, has (started to) become characteristic of the stored form itself. This raises the question of whether it even makes sense to

⁴For a truly interesting and very inspiring account of constituency and phonological reduction, see Bybee and Scheibman (1999).

speak of reduced forms, as the reduced realization may in fact be the “full” form stored in the mental lexicon, a view compatible with Tily et al.’s (2009, p. 161) statement that phonetic realizations “reflect higher level linguistic information”. This in return would lend further support to accounts of discourse markers as being lexical items in their own right and potentially constituting their own syntactic category, as they do not only have distinctive syntactic and pragmatic properties (Schourup, 1999), but also phonetic ones. Clearly, it needs more elaborate research into the syntactic, pragmatic, and phonetic properties of a wider range of so-called discourse markers and their compositional counterparts before any generalizing conclusions can be drawn. Still, in this particular case, the reduction of *you know* acts as a strong cue to the pragmatic function of the collocation.

References

- Bates, D. & Sakar, D. (2009). *Lme4: Linear mixed-effects models using s4 classes*. Version R package version 0.999375-27.
- Bell, A., Brenier, J. M., Gregory, M., Girand, C., & Jurafsky, D. (2009). Predictability effects on durations of content and function words in conversational English. *Journal of Memory and Language*, 60, 92–111.
- Bell, A., Jurafsky, D., Fosler-Lussier, E., Girand, C., Gregory, M., & Gildea, D. (2003). Effects of disfluencies, predictability, and utterance position on word form variation in English conversation. *Journal of the Acoustical Society of America*, 113(2), 1001–1024.
- Bybee, J. & Scheibman, J. (1999). The effect of usage on degrees of constituency: The reduction of *don't* in English. *Linguistics*, 37(4), 575–596.
- Croft, W. (1995). Intonation units and grammatical structure. *Linguistics*, 33, 839–882.
- Ernestus, M. (2014). Acoustic reduction and the roles of abstractions and exemplars in speech processing. *Lingua*, 142, 27–41.
- Ernestus, M. & Warner, N. (2011). An introduction to reduced pronunciation variants. *Journal of Phonetics*, 39, 253–260.

- Field, A., Miles, J., & Field, Z. (2012). *Discovering statistics using R*. London: Sage.
- Johnson, K. (2004). Massive reduction in conversational American English. In K. Yoneyama & K. Maekawa (Eds.), *Spontaneous speech: Data and analysis. Proceedings of the 1st session of the 10th international symposium* (pp. 29–54). Tokyo, Japan.
- Kiesling, S., Dilley, L., & Raymond, W. D. (2006). *The Variation in Conversation (ViC) Project: Creation of the Buckeye Corpus of Conversational Speech*. Buckeye Corpus Manual.
- Local, J. (2003). Variable domains and variable relevance: Interpreting phonetic exponents. *Journal of Phonetics*, 31, 321–339.
- Müller, S. (2005). *Discourse markers in native and non-native English discourse*. Amsterdam/Philadelphia: John Benjamins.
- Pitt, M. A., Johnson, K., Hume, E., Kiesling, S., & Raymond, W. (2005). The Buckeye corpus of conversational speech: labeling conventions and a test of transcriber reliability. *Speech Communication*, 45, 89–95.
- R Development Core Team. (2007). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <http://www.R-project.org>.
- Schourup, L. (1999). Discourse markers. Tutorial overview. *Lingua*, 107, 227–265.
- Tily, H., Gahl, S., Arnon, I., Snider, N., Kothari, A., & Bresnan, J. (2009). Syntactic probabilities affect pronunciation variation in spontaneous speech. *Language and Cognition*, 1-2, 147–164.