How do speakers and hearers disambiguate multi-functional words?

The case of *well*

Christoph Rühlemann[1,2] and Stefan Th. Gries[3,4]
[1] Albert-Ludwigs-University Freiburg | [2] Philipps-University Marburg | [3] University of California, Santa Barbara | [4] Justus Liebig University Giessen

Well is an exemplary multi-functional word performing pragmatic and syntactic functions. That multi-functionality poses a potential problem: How do hearers in conversation determine which function is actualized and how do speakers project the function actualized? We address both questions examining factors hearers rely on to disambiguate *well* and the resources speakers deploy to designate *well*'s function. The study is based on 8-, 9-, and 10-word turns containing *well* extracted from the British National Corpus for which audio files from the Audio BNC are available. We include duration, measuring *well*'s durations in Praat. The workflow comprised both qualitative and quantitative methods. Qualitatively, all turns were manually inspected and the functions and subfunctions of *well* were identified. Due to data paucity the quantitative analysis was based only on a broad distinction between syntactic and pragmatic functions. The analysis involved two logistic regression model selection processes, one adopting a hearer, one a speaker perspective. Based on the factors position in the turn, duration and lexical context, our final models indicate that hearers disambiguate the two main functions of *well* drawing on lexical context and position in the turn while speakers project *well*'s functions by modulating duration. We propose that Hoey's (2005) 6th priming hypothesis, concerned with polysemy, can be extended to also include polyfunctionality. Position also suggests a reading in terms of Hoey's 'textual colligation' hypothesis related to a word's *position*: particularly in its incarnation as a marker of dispreferreds, pragmatic *well* is heavily primed to occur turn-initially.

1. Introduction

The pragmatic marker *well* has "received more attention than any other English pragmatic marker" (Aijmer 2013: 20) both diachronically (see Brinton 2010 for an

https://doi.org/10.1075/fol.18050.ruh | Published online: 4 June 2020
Functions of Language 28:1 (2021), pp. 55–80. issn 0929-998x | e-issn 1569-9765
© John Benjamins Publishing Company

overview) and synchronically (see Rühlemann & Hilpert 2017 for an overview). However, much like other pragmatic markers such as *like* (Rühlemann 2007) and *anyway* (Wennerstrom 2001), *well* performs not only a number of distinct pragmatic functions but also "has quite a range of syntactic functions" (Stein 1985: 299) (cf. also Aijmer 2013; Jucker 1993). The syntactic subfunctions of *well* have undoubtedly received much less attention (for a rare exception see Stein 1985). To the best of our knowledge, no attention at all has been paid to the question of how speakers *disambiguate* the two major functions of *well* in spontaneous conversation. Our goal in the present paper is to explore this *terra incognita*.

The pragmatic marker *well* covers a broad range of subfunctions ranging "from dispreferred response signal to face-threatening minimiser to qualifier or frame" (Brinton 2010: 297).[1] A notable attempt at relating distinct subfunctions to 'one core meaning' is Jucker (1993); drawing on Relevance Theory he defines that core meaning of pragmatic *well* as signaling that "the context created by an utterance may not be the most relevant one for the interpretation of the next utterance" (Jucker 1993: 450). It is beyond the aims of the present paper to describe the full range of possible functions of *well* (for a recent, extensive, discussion of *well* in a number of varieties and context types, including conversation, see Aijmer 2013). We instead restrict ourselves to mentioning three functions that are widely recognized and discussed in the literature; they are also the ones identified in the sample underlying the present analysis. The three functions include *well* as a restart marker, a quote marker, and a dispreferred marker.

The restart-marker function is a self-reflexive function. Self-reflexivity is associated with the speaker's metalinguistic awareness "of what type of interaction they are involved in, if something goes wrong in the process, and what their attitudes are" (Aijmer 2013: 4). While these speaker-internal processes themselves are inaccessible to observers, pragmatic markers such as *well* "can emerge as overt indicators of (or windows on) ongoing metalinguistic activity in the speaker's mind" (Aijmer 2013: 4). For example, in (1), *well* accompanies an instance of self-repair, a reformulation changing "fifteen" into "thirteen" minutes. In (2), Alan's response to his interlocutor's 'troubles telling' is interspersed with hesitation symptoms, including lengthening ("I mea:n") and pauses, both filled ("erm") and unfilled, the latter unusually long:

(1) well we got fifteen, **well** thirteen minutes
(BNC: KC9 668; corrected transcription)

1. The 'frame' function describes *well*'s capacity to separate constructed dialog from the surrounding discourse (cf. Jucker 1993).

(2) 1 UNK: we've had this problem in the past with John
2 makes you wo- [wary]
3 Alan: [mmm]
4 UNK: and cautious.
5 Alan: yes **well** (.) erm
6 (2.9)
7 I mea:n
8 (1.5)
9 you can't help being aware of past experiences.
(BNC: KB0 1405–1412; corrected transcription)

The quote-marker function and the dispreferred-marker function, by contrast, are contextualizing functions. Contextualization is closely linked to Schiffrin's (1987: 31) definition of pragmatic markers as "sequentially dependent elements that bracket units of talk" (cf. Fraser 1990). The contextualization function is a hearer-oriented function in that pragmatic markers "typically mark off segments in the discourse thus helping the hearer to understand how the stream of talk is organised" (Aijmer 2013: 6).[2] Crucially, pragmatic markers achieve contextualization by signaling how discourse *relates* to other discourse. The discourse relationship indicated by quote-marker *well* is the transition from the speaker's own words to a reported speaker's words, or the transition from one reported speaker's words to another reported speaker's words; either transition is a change in 'footing' (Goffman 1981) characteristic of constructed dialog. Flagging this transition is an important interactional task since the use of constructed dialog entails the switch from the speaker's deictic system to the reported speaker's deictic system and, therefore, the hearer needs to be made aware of the switch to be able to resolve deictic references according to that other system (cf. Bolden 2004; Holt 1996; Rühlemann 2013). In (3), for example, the speaker prefaces four instances of constructed dialog with *well*:

(3) 1 UNK: the other, the other day we was on about,
2 Nicola said about oh she goes like that to Luke.
3 I said "↑oh you can't do that otherwise he won't be able to have <u>ba</u>bies"

2. Given this orientation toward the hearer, pragmatic markers are key elements of 'recipient design' (Sacks 1992). Also, the capacity of pragmatic markers "to indicate, often in very complex ways, just how the utterance that contains them is a response to, or a continuation of, some portion of the prior discourse" (Levinson 1983: 88) makes them resources of discourse deixis (cf. Levinson 1983: 87–88, 2004: 119).

4 so Nicola said "but he doesn't have babies, women have babies."
5 I said "**well** (0.4) it comes from a man."
6 So (0.6) Luke said "**well** what are they like¿"
7 So I said "**well** they're like little tadpoles."
8 And he went (0.9) "**well** (.) I can't ↑feel any."
(BNC: KC5 2018–2026; corrected transcription)

Finally, what is referred to here as the dispreferred-marker function of *well* has alternatively been referred to as 'dissonance' marker (Fraser 1990: 387), 'insufficiency' marker (Jucker 1993), and 'warning particle' (Levinson 2013: 108) function. The dispreferred marker function is a delicate function covering a broad spectrum of subtly differentiated subfunctions in context. A common denominator to all the subfunctions is that *well* is "primarily addressed to the relationship between a prior and a current turn" (Heritage 2015: 88) and indicates various shades of "nonstraightforwardness in responding" (Schegloff & Lerner 2009: 91); for detailed accounts of these subfunctions see Aijmer (2013) and Heritage (2015). The notion 'dispreferred' is a conversation-analytic notion denoting a second turn in a two-turn sequence (an 'adjacency pair') that runs counter to the expectations set up by the first turn. A dispreferred needs "to do extra conversational work" (Liddicoat 2007: 111), and is therefore "marked by various kinds of structural complexity" (Levinson 1983: 307). Turn-initial *well* is a key element in that structurally more complex design. It thus "standardly prefaces and marks dispreferreds" (Levinson 1983: 334).

Consider for illustration fragment (4) in which June and Geoffrey, a long-time couple, are discussing the unhappy marriage of a friend of theirs. Their discussion is interspersed with numerous disagreements, indexed by *well*, none of which are fully spelled out. Rather, they play out at the level of implicature. In line 1, June notes she is "surprised", leaving unsaid what she is surprised about, before going on to say that the friend "isn't stuck for them children". The implicature is that she is surprised the friend hasn't filed for a divorce yet, now that she is free to do so given the children's being grown up. The turn also implicates that June *expects* her friend to take the opportunity of liberating herself from the marriage — hence the surprisal. Geoffrey, in line 5, takes a contrary stance by saying "[Let's face it] she erm (.) I mean she was the one who bloody married him!" thereby putting the blame for the friend's being stuck in a failed marriage on the friend herself and potentially even questioning her right to a divorce. This disagreement between June and Geoffrey is followed by a lapse of 1.8 seconds. The silence is broken by June's emphatic "well she ↑HAtes him!". The emotional delivery is a clear index of June's empathy with the friend's predicament, revealing the turn as an implicit *assessment* that the friend's marriage is unbearable. Also, June contradicts Geoffrey's implicated questioning the friend's right to a divorce in that the turn implicates that the friend has every right to wish to terminate the unbearable situation. At this point Geoffrey does offer some lacklustre agreement by producing a softly spoken "°yeah°". The couple's disagreement on what stance to take toward their friend is, however, anything but resolved. A long pregnant pause of 5.7 seconds ensues, which is finally broken by June's *upgraded* assessment "she literally hates him!" where the insertion of the intensifying "literally" shifts the emphasis from the vocal to the verbal modality, thus rendering June's stance more explicit. Geoffrey's new "yeah" is weak, failing to provide the sought affiliation with June's assessment. In pursuit of that affiliative second assessment, she proffers, after yet another pause, a fully *explicit* assessment in "well I think that's awful (.) I do.". But again Geoffrey resists the course of action: his response in lines 15–16 has typical ingredients of the structurally more complex design of a dispreferred second assessment: (i) the twice-occurring "well"; (ii) the slight delay; and (iii) the demonstrative "that", an 'extended reference' to June's negative view of the marriage: "I suppose that's what she thinks" attributes the negative view to the friend, thereby distancing himself from it. In other words, Geoffrey does not mirror June's stance but deflects it.

(4)
1 June: I'm surprised (0.9) y' know, she isn't stuck for them children mo- any more
2 [(if he'd been)]
3 Geoffrey: [oh yeah.]
4 June: [( )]
5 Geoffrey: [Let's face it] she erm (.) I mean she was the one who bloody married him!
6 (1.8)
7 June: **well** she ↑HAtes him!
8 (0.7)
9 Geoffrey: °yeah°
10 (5.7)
11 June: she literally hates him!
12 Geoffrey: yeah.
13 (1.9)
14 June: **well** I think that's awful (.) I do.
15 Geoffrey: **well** yeah ( ) (0.6) **well** I suppose that's what she thinks,
16 if she gonna go through the rest of her life with a bloke she hates.

(BNC: KCT 7746–7755; corrected transcription)

The pragmatic subfunctions of *well* exhibit strong associations with positions in turns. In its subfunction as a marker of dispreferreds, *well* is intimately associated with turn beginnings whereas quote-marker *well* and restart-marker *well* typically occur turn-internally. De Klerk (2005: 1190) regards initial position as the 'natural' position for *well* (see also Heritage 2015). Turn-initial dispreferred *well* is intimately related to the 'three-part structure' (Sacks *et al.* 1974: 723) of turns, where it participates in, or represents, the 'pre-start' part designed to address the incipient turn's relation to the preceding turn (Sacks *et al.* 1974: 722).[3]

As noted, *well* also performs syntactic subfunctions. They include the use of *well* as an adverb, an adjective, and the 'additive subjunct' function (Quirk et al. 1985: 609) in *as well*; by contrast, the uses of *well* as a noun and a verb are unrelated (cf. Aijmer 2013). No positional preferences have been reported for syntactic uses of *well*. The three syntactic functions are illustrated in (5)–(7).

(5) Adjective:
you do n't look very **well** this morning ma (BNC: KB1 11)

(6) Adverb:
Nat said her envelopes do n't stick very **well** (BNC: KC5 2124)

(7) Additive subjunct:
I meant to put this one out as **well** (BNC: KB0 442)

It has been only recently that researchers have made attempts to approach *well* via its *acoustic* properties. Aijmer (2013) examines prosodic features of a number of pragmatic markers; the features include pausing, tempo, intensity, and articulation (reduced or full form). She finds that *well* serving as 'insufficiency' marker — above referred to as 'dispreferred marker' — and as quote marker are typically reduced (*w'll*). Romero-Trillo (2015) investigates 'tone'[4] realizations of the markers *well, I mean*, and *you know*, discovering that pragmatic marker *well* is typically realized in tone 0, that is, without any tonicity. Gravano *et al.* (2012), studying acoustic properties of some pragmatic markers (not including *well*), find function-related variation of intonation, intensity, pitch, and duration. Rühlemann (2018) provides evidence that the two major functions of *well* have

3. The three-part structure Sacks *et al.* are referring to comprises the (i) (optional) 'pre-start', (ii) the turn proper in the form of at least one turn-constructional unit (TCU) "involved with what is occupying the turn" (Sacks *et al.* 1974: 722), and (iii) the (optional) 'post-completer', typically tags or names, concerned with "the relation of the turn to a succeeding one" (Sacks *et al.* 1974: 722).

4. The notion of 'tone' describes "the upward/downward/level movement of the voice pitch in the Tone Unit" (Romero-Trillo 2015: 6). Tones include, for example, falling, rising, and level tones.

significantly different durations in turns, with pragmatic *well* being *shorter* than syntactic *well*.[5]

Even less seems to be known about the collocational profiles of *well*. As regards syntactic *well*, instances of *well* performing the additive subjunct function are obviously closely aligned with *as*; collocational preferences of adjectival and adverbial uses of *well* have not yet been reported. In terms of collocations of pragmatic *well*, a tendency has been observed for the (turn-initial) dispreferred subfunction of *well* to occur in clusters with other pragmatic markers, most notably *oh*. This co-occurrence is highly patterned: the clumps "participate in a canonical ordering — a linear syntax" (Heritage 2015) with *well* occurring *after* the co-occurring markers, as illustrated in (8).

(8) **No, oh well** let's hope he'll get be̲tter (BNC: KB0 118; corrected transcription)

As noted, the overall goal in this paper is to address the two questions: how do hearers disambiguate multifunctional items such as *well* and how do speakers help them to do so? Disambiguation is likely a task conversationalists need to address as ambiguity poses a problem in fast-pitched conversation, where "we each seem to produce about 16000 words in about 1200 turns a day in conversation" (Levinson & Holler 2014: 2), where the usual gap between turns on average across languages is only about 200 ms (Stivers *et al.* 2009) despite speech production latencies over 600 ms for a single word (Indefrey & Levelt 2004) and far greater latencies for whole utterances (Schnur *et al.* 2006; cf. also Levinson & Torreira 2015). Specifically, our aim is to test the hypothesis that the functional disambiguation of pragmatic and syntactic uses of *well* is influenced by three factors: position, duration, and lexical context. We take this hypothesis to be true based on the following premises.

Positional preferences seem obvious with regard to all three pragmatic functions of *well*: quote-marker *well* and restart-marker *well* will typically occur turn-internally, as most quotations follow a reporting clause ('he said', 'she said', etc.), and reformulations, by default, follow a repairable; dispreferred *well* can best do its job of marking 'dissonance' vis-à-vis the preceding turn at the *onset* of the response turn (cf. Heritage 2015), that is, at the juncture between two turns. Further, we assume duration to play a role in disambiguating functions of *well* based on the above-mentioned research by Aijmer (2013), Gravano (2012), Romero-

5. Taking acoustic properties into account is a promising line of inquiry considering that talk-in-interaction is inherently multi-modal where the burden of information can be *shifted* from one modality to another (Levinson & Holler 2014: 1). That 'cross-modality' (Arndt & Janney 1987) seems not unlikely to play a role in disambiguating multi-functional items attending to a large palette of pragmatic and syntactic functions such as *well*.

Trillo (2015) and Rühlemann (2018). Gravano *et al.* (2012) found duration to be correlated with specific pragmatic functions of select pragmatic markers; by extension, we assume that this function-duration correlation can also be found for *well*. Aijmer's (2013) and Romero-Trillo's (2015) findings suggest that pragmatic *well* is reduced both in terms of articulation (Aijmer) and tonicity (Romero-Trillo). That pragmatic *well* is also reduced in terms of duration was demonstrated by Rühlemann (2018).

Finally, in disambiguating the major functions of *well*, speakers are very likely to draw on the lexical context in which it occurs. We base this assumption on Hoey's (2005) 6th priming hypothesis: "[w]hen a word is polysemous, the collocations, semantic associations and colligations of one sense of the word differ from those of its other senses" (Hoey 2005: 13). Thus, a preceding *oh* raises the odds that *well* will be pragmatic, whereas a preceding *as* or a succeeding noun strongly suggest that the function of *well* will be syntactic.

Moreover, as regards the latter two factors, the relationship of duration and 'language redundancy', i.e. a word's predictability given its co-text, is well established: "less predictable elements in utterances tend to be articulated more carefully, and more slowly as a result, than more predictable elements" (Aylett & Turk 2004: 33; for multiple research on the relationship between duration and lexical context/predictability see references therein). Finally, reducing articulatory care and, thereby, reducing duration for words that the context renders highly predictable also aligns well with the larger principle of least effort proposed by Zipf (1949).

2. Data and methods

This research is based on CABNC (Albert *et al.* 2015), a new corpus consisting of 59 files of the 'demographically-sampled' (conversational) subcorpus of the BNC available in audio (Coleman *et al.* 2012), together amounting to "about 164 hours of audio" (Albert, pc). The corpus contains more than two million words produced by over 600 distinct speakers drawn randomly from a wide-ranging sociodemographic spread (Crowdy 1995: 225). The defining feature of the CABNC is the addition of measurements of the durations of the roughly two million words in the corpus; the durations are recorded as attribute values in XML structure and can thus be extracted and examined.

The data sampling proceeded in two major steps.

Step 1

Using XQuery (cf. Rühlemann *et al.* 2015) we extracted from CABNC a sample consisting of all 9-word turns containing the item *well* occurring in any position or performing any function; the 9-word length was chosen as it corresponds to the average turn length in conversation (Rayson et al. 1997).

For these data, we then coded the relevant variables for our analysis. First, the dependent variable FUNCTION was manually annotated by inspecting each *well* in the context of its turn. We began with a 7-level categorization of functions of *well*, namely into the types exemplified in (9):

(9)	a.	adjective:	different when you're not well you feel tired
	b.	*as well*:	and you saw a cat as well did you
	c.	adverb:	she comes out well on tape does n't she
	d.	quote marker:	i said well was it like a part-time thing
	e.	restart marker:	yes yes very questionable well it's it's
	f.	dispreferred marker:	oh well you ca n't have those sorry no
	g.	unclear:	you did well that's now we've got

Analyzing the distribution of the pragmatic and syntactic uses of *well* in the 9-word turn sample we discovered a massive skew toward the pragmatic uses, leaving us with too few occurrences of syntactic *well* to perform robust statistical analyses. We therefore decided to collect more data focused on syntactic *well*; this was done in Step 2.

Step 2

Again using XQuery we extracted from CABNC an additional sample consisting of all 8- and 10-word turns containing *well* occurring in any position or performing any function. Since the interest in that additional sample was in syntactic uses of *well*, we first thinned the sample by extracting from it only those turns in which *well* did *not* occur as the turn-first or turn-second word, thus excluding the overwhelming majority of turns in which *well* acts as a dispreferred marker (more on the strong effect of position in the turn, referred to as POSINTURN, as a functional predictor follows below). The occurrences of *well* in this thinned 8- and 10-word turn sample were then manually coded for whatever function *well* was found to perform in them. Turns in which *well* was used as a pragmatic marker were excluded from the sample, thus leaving us with an additional sample of 8- and 10-word turns in which *well* performed *only* syntactic functions.

The main sample and the additional sample comprise a total of 550 turns. The frequencies of the six subfunctions of *well* in the final sample are broken down in Table 1:

Table 1. Frequencies of subfunctions of *well* in the final sample

Pragmatic	Frequency	Syntactic	Frequency
dispreferred marker	253	adjective	15
restart marker	11	adverb	73
quote marker	4	as well	39
Total	**268**	**Total**	**127**

While this two-step methodology did provide us with sufficient occurrences of pragmatic and syntactic uses of *well*, it did *not* provide sufficient tokens of all the three pragmatic and three syntactic *subfunctions* identified in the 9-word turn sample. That is, the two-step methodology did solve the issue of data sparsity for the two major functions 'pragmatic' and 'syntactic' but it did not allow us to overcome data sparsity for each subfunction of *well*.

We therefore conflated the adjectival, adverbial, and *as well* uses into a category we call syntactic *well*, and subsumed the restart-marker, quote-marker and dispreferred-marker uses into a category called pragmatic *well*; this new two-level variable referred to as FUNCTION was used as a binary independent variable in the modeling process outlined in Section 3.1 and a binary dependent variable in the modeling process outlined in Section 3.2.

As for the other variables, the values of the first, POSINTURN, were straightforward to determine as the number of the 'slot' that the word *well* had in the turn.

With regard to the second variable, DURATION, we could not rely on the timings in CABNC because their accuracy rate is only 67% (Renwick *et al.* 2013) and thus seriously sub-optimal. To arrive at reliable durational measurements, we re-analyzed the lengths of all *well*s in the 550 turns in Praat, a sophisticated acoustic analysis software (Boersma & Weenink 2012), but given co-articulation, poor audio quality, background noises, distance from the microphone, etc. not all *well*s could be measured reliably. The number of *well*s whose lengths could be measured with confidence was 395 (see Table 1). For the statistical analyses discussed below, we converted the DURATION values into milliseconds and logged them to the base 2 to avoid the massive skew that the raw DURATION-values exhibited.

With regard to the final relevant factor, lexical content, we adopted what we think is a novel approach, which we first contextualize as well as motivate and then explain in more detail.

It is uncontroversial that the role of context is quite an important one, no (corpus) linguist would need to be convinced of that. In fact, context can often be so important as to cancel out, or override, pretty much every other variable: In the present case, if the word preceding *well* is *as* and the word after *well* is not *as*, then we have an instance of *as well* (i.e. here, a 'syntactic' use). Crucially, in this context the exact value of DURATION is irrelevant because the function of *well* is almost deterministically obvious from the context. Maybe POSINTURN can reinforce this even more, namely if *as well* is placed at the end of the turn. Thus, including some notion of context is essential — either as a predictor on its own or, as in the present research, a control variable to make sure that we do not attribute variability in the dependent variable that could be explained by context to our actual predictor of interest, here DURATION (see Gries 2018: Section 3.1). However, it is far less obvious how to operationalize context and, especially, how to do so in a way that is

– generic enough to be applicable to a wider range of phenomena. For instance, the criterion of *as*-then-*well*-then-not-*as* is of course specific to a study of (the functions of) *well* and does not generalize easily;
– feasible in how it would scale up to data sets that are much larger than the one we are looking at here. The above criterion is too specific but somewhat scalable precisely because of its specificity: it is easy to check what happens directly in front of and after a search word. However, constructions involving longer dependencies and/or discontinuous elements are much harder to tackle in any way that can easily be applied to thousands of hits or more.

The approach we are using here is based on Gries's (2018) applications of work in particular by Milin *et al.*'s (2009), Baayen *et al.*'s (2011), and Lester's (2018) information-theoretically-inspired definition of prototypicality in distributional psycholinguistics. As for the former, Milin *et al.* (2009) explore reaction times to Serbian nouns from a visual lexical decision task and show that the reaction times are significantly correlated with the degree to which a word's morphological frequency profile — how often the noun is attested with each inflectional affix — is different from the overall frequencies of each inflection affix. As for the latter two, Lester (2017) follows arguments by Baayen *et al.* (2011: 441) and frames this kind of result in terms of prototype theory. Discussing Milin *et al.*, he summarizes as follows: "[w]ords that matched the average distribution of nouns from their [inflectional] class were recognized faster. I refer to this type of effect as a prototypicality effect. Excusing the homuncular analogy, these lexical prototypes may be thought of as the 'expectations' of the processor" (Lester 2017: 31).

In a nutshell, our approach here aims at (i) controlling for contextual information in our statistical analysis (to avoid overestimating the effects of POSINTURN and DURATION) in a way that (ii) is applicable to a wide variety of situations and scales up well and (iii) relies on determining for each use of *well* how different it is from the lexical contexts prototypical for lexical uses of *well* and the lexical contexts prototypical for pragmatic uses of *well*. It is important to note that this does not mean that we are assuming a one-dimensional continuum of uses of *well*, with a lexical-prototype endpoint on one end and a pragmatic-prototype endpoint on the other. While this approach might seem obvious or even desirable at first sight, it needs to be borne in mind that there could be uses that are different from both most syntactic and most pragmatic uses of *well*; therefore, one's operationalization must allow for such cases and must not treat the two prototypes as being on a single continuum. In what follows, we borrow from Gries (2018) to explain our approach. Unlike many new vector-space based approaches, the present approach is gratifyingly simple and requires many fewer data points to work well and little more than frequency data from concordance lines.

First, for each instance of *well*, we identified all words/collocates of *well* in the turn, which amounted to 699 (case-insensitive) types that were attested at least once in *well*'s immediate environment.

Second, we cross-tabulated all 699 collocates ever attested with *well* with the two functions we distinguished for *well*. For example, the word *apology* co-occurred with *well* just once, namely with a syntactic use of *well*; the indefinite determiner *a* co-occurred with *well* 44 times — 8 times with *well* in a syntactic use, 36 times with *well* in a pragmatic use, and so on for all word types ever occurring around *well*. These interim results were captured in a table with two columns (for syntactic and pragmatic uses of *well*) and 699 rows (one for each collocate type). A different way to characterize this would be to say that, essentially, we generated frequency lists of the collocates of *well*, one for each function of *well*.

Third, we converted the co-occurrence frequencies of all word types with the syntactic uses and, respectively, pragmatic uses of *well* into vectors of column percentages, which represent the prototypes of the collocate distribution of the two uses of *well* (following the above-discussed logic of Baayen *et al.* 2011; Lester 2017; Milin *et al.* 2009). The prototypes yielded by this approach are abstract in nature. That is, they are *vectors* of collocate percentages, rather than concrete examples. However, to give an idea of what the approach entails, (10) provides examples of uses of *well* close to and distant from the syntactic prototype (by having low and high KL-divergences respectively; see below). Example (11), by contrast, provides examples of uses of *well* close to and distant from the pragmatic prototype.

(10) a. she's doing very well, isn't she? *close to the syntactic prototype*
b. well once they're over 18 age is immaterial *distant from the syntactic prototype*

(11) a. well, you'll have to see what it is *close to the pragmatic prototype*
b. ours has got our mobile number in as well *distant from the pragmatic prototype*

The final step of our approach involved computing for every use of *well* the Kullback-Leibler (KL) divergence from (i) the syntactic prototype and (ii) the pragmatic prototype and storing them in two variables, DIVFROMSYN and DIVFROMPRA. The KL-divergence is a measure that quantifies how much one probability distribution p (here, the relative frequencies/percentages of collocates in one use of *well*) diverges from another probability distribution q (here, the relative frequencies/percentages of *all* collocates of either syntactic or pragmatic *well*). The KL-divergence (KLD) theoretically ranges from 0 to plus infinity and is non-symmetric — $D_{KL}(p||q)$ is usually not the same as $D_{KL}(q||p)$ — and is a measure that can actually be used for many corpus-linguistic applications (such as association measures, dispersion, etc.; see Gries 2018, Gries & Durrant fc.). In its simplest form, the KL-divergence is then computed as shown in (12).

(12) $$D_{KL}(p \parallel q) = \Sigma_i p_i \times log_2 \frac{p_i}{q_i}$$

Consider as an example the sentence *He is not doing well.* Here, each of the four collocates of *well* — *he, is, not*, and *doing* — occurs once around *well*, which means p is 0.25 for each of these collocates and 0 for all other collocates ever observed for *well* in our sample. On the other hand, q is either the syntactic prototype, i.e. the vector of overall percentages of all collocates of *well* used syntactically, or the pragmatic prototype, i.e. the vector of overall percentages of all collocates of *well* used pragmatically. The fact that every use of *well* comes with two KLDs, one from each prototype, captures the above-mentioned desideratum that one does *not* want the two prototypes to be on a single continuum but wants to allow for uses of *well* that are atypical of either pragmatic or syntactic uses.

This general approach is already impressively confirmed even before we include POSINTURN and DURATION in our model if one recognizes the high degree of classificatory power of DIVFROMSYN and DIVFROMPRA for the two functions of *well*. The upper panels of Figure 1 represent spine plots with the divergences, the lexical-context variables, on the x-axis and the function of *well* on the y-axis. As is obvious from both panels, the more one increases the divergence from one prototype — the pragmatic one on the left and the syntactic one on the right — the less likely *well* is to have that function. The corresponding lower panels indicate the effect that the lexical-context variables have on the probability of the *well* being used syntactically with a regression line and confidence band computed from a generalized additive model (GAM): these lines confirm those of the descriptive spine plots. Most impressive, however, is the classificatory power of both divergences combined: a GAM that tries to predict the function of *well* from the two lexical-context predictors and their interactions returns an $R2$-value of 0.903 and a proportional reduction of error when trying to guess the function of *well* of $\lambda = 0.929$; even a regular binary logistic regression with the same predictors achieves an *R*2-value of 0.921 and a *C*-score of 0.994. In other words, the divergence variables are truly excellent at discovering how *well*'s function is correlated with certain lexical contexts.

In sum, the multifaceted nature of lexical context is operationalized here as a two-dimensional space represented by the two divergence vectors and entered as such into our regression analyses to serve as a control for the multifaceted notion of 'lexical context' that is otherwise very hard to control for.

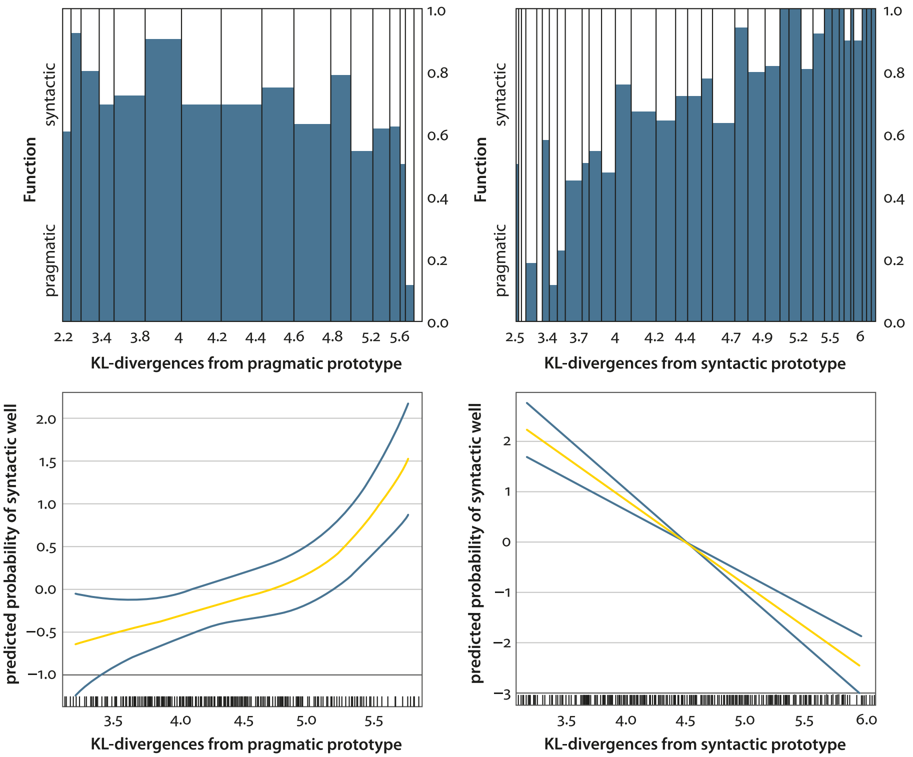

Figure 1. The correlations between the divergence predictors and *well*'s functions: Descriptive spine plots (top panels) and the correlations between the divergence predictors and syntactic *well* from GAMs

Now that we have discussed the nature of the variables involved in this study, we need to turn to how to approach the functions of *well* and the potential effect of DURATION. Given the nature of the phenomenon and the data we have, there are essentially two different kinds of approaches one could pursue:

- from a production perspective, the dependent variable is DURATION: As the speaker is incrementally planning his utterance, he knows in what function he will use *well* and he has a pretty good idea of the lexical context in which the use of *well* will occur — however, the exact duration of *well* is what gets decided last and, potentially, in a way that is co-determined by these other factors. A production-focused analysis will therefore treat DURATION as a numeric dependent variable, FUNCTION as a binary predictor, and the lexical-context variables DIVFROMPRA and DIVFROMSYN as well as POSINTURN as controls.
- from a comprehension perspective, the dependent variable is FUNCTION: As the speaker is producing the utterance, the hearer needs to figure out what the function of each of the words is, which of course includes *well*, and by the time the hearer encounters *well*, she will have encountered the lexical context, she will know the position of *well* in the turn, and she will notice *well*'s duration, but needs then to 'decide' how to interpret *well*. A comprehension-based analysis will therefore treat FUNCTION as a binary dependent variable, DURATION as a numeric predictor, and — as before — the lexical-context variables DIVFROMPRA and DIVFROMSYN as well as POSINTURN as controls.

In what we argue is a novel or at least very rare approach, we decided therefore to explore both directions: the production perspective with a linear model selection process, and the comprehension perspective with a generalized linear model selection process. Neither model involved random effects given that more than 80% of the data are from speakers who provide maximally three data points. Both selection processes used *AICc* as the criterion for model comparison and checking variance inflation factors to detect potentially problematic collinearity. Both models considered POSINTURN in three ways: as a binary predictor (*initial* vs. *non-initial*), as a straight line, and as a polynomial to the second degree to account for the obvious possibility that a predictor's effect may include curvature and not just a straight-line effect.

3. Results

3.1 Predicting duration

We first fit a null model (to compute an *AICc* baseline, which turned out to be 736.38) and a model that predicts DURATION only on the basis of FUNCTION ($AICc = 690.48$). This model is not particularly strong (adj. $R2 = 0.112$), but its output labels FUNCTION a highly significant predictor ($t = 7.12$, $df = 393$, $p < 0.0001$);

the effect of FUNCTION is a predicted 60.8 ms difference between pragmatic *well* (predicted duration: 169.24 ms) and syntactic *well* (predicted duration: 230 ms).

However, this model is bound to be extremely anticonservative and, thus, overestimates the effect of FUNCTION because it does not contain any of the controls, which leaves all variability in the data 'up for grabs' by FUNCTION. Thus, we continued with a model selection process that did involve the control variables; model comparison led to including POSINTURN as a straight-line predictor. The final model included all four variables as main effects — i.e. the three controls, the main predictor of interest FUNCTION, but no interactions — and is highly significant ($F_{4,390} = 14.47$, $p < 0.0001$, adj. $R2 = 0.12$). However, the effect of FUNCTION is now not significant anymore ($p_{\text{deletion}} = 0.1115$) and it is only included in the model because its inclusion led to a tiny reduction in *AICc* (from 690.43 to 689.92), one that is so small some analysts might not even have included it.

What is the nature of the effects? As for the controls, the two lexical-context controls have weak effects such that increased distance from the pragmatic prototype leads to shorter *well*s and increased distance from the syntactic prototype leads to longer *well*s; also, positionally later *well*s in the turn tend to be longer. As for the predictor: once all controls are considered, syntactic *well*s are a bit longer (by 34.8 ms); these effects are visualized in Figure 2.

Two conclusions are noteworthy. The results underscore the danger of exploring factors from a monofactorial perspective. Without controls, the effect of FUNCTION is highly significant and nearly twice as high as when controls are considered properly (see again Gries 2018: Section 3.1) but once the controls *are* considered, it seems that, from a production perspective, the speaker may make some use of modulating the length of *well* (either for his own or for the hearer's benefit), but not much.

3.2 Predicting function

For this direction of argumentation, we proceeded in a very similar way. We first fit a null model (to compute an *AICc* baseline, which turned out to be 498.14), a model that predicts FUNCTION only on the basis of DURATION as a straight-line effect (*AICc* = 450.59), and one that predicts FUNCTION on the basis of DURATION as a curved effect (polynomial to the second degree, *AICc* = 408.66). This model is intermediately strong (Nag. $R2 = 0.3$) but with a just about acceptable *C*-score of 0.788, but its output labels DURATION a highly significant predictor (*LR*-score = 93.53, $df = 2$, $p < 0.0001$); the effect of DURATION is such that the predicted probability of syntactic *well* is low for most durations, but peaks around between 250 and 300 ms.

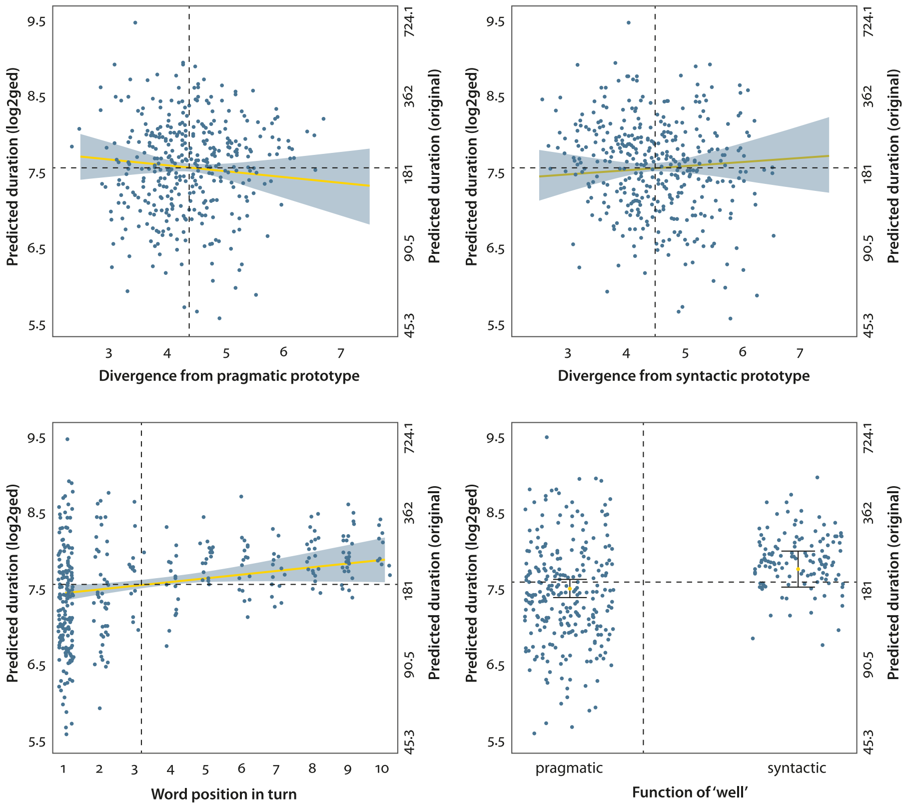

Figure 2. Effects plots of the four variables in the final model

Again, however, this model is bound to be extremely anticonservative and, thus, overestimates the effect of DURATION. Thus, as before, we continued with a model selection process that also involved the control variables; model comparison led to including POSINTURN as a curved predictor. The final model included only the controls, but not DURATION: forcing DURATION into a model that contains the lexical-context controls and POSINTURN increases *AICc* by 2 when POSINTURN is curved and by 1.7 when it is not. The final model is highly significant, however, (*LR*-score = 477.89, *df* = 4, $p < 0.0001$) and extremely predictive (Nag. *R*2 = 0.981, *C* = 1), but that result is mainly due to the lexical-context predictors, whose predictive power is very high and which behave as discussed in Section 2 above (see Figure 1). The two top panels of Figure 3 and the lower left panel represent the effects in our final model; for the sake of completeness, the lower right panel visualizes the (null) effect of DURATION if it is forced into the final model as well.

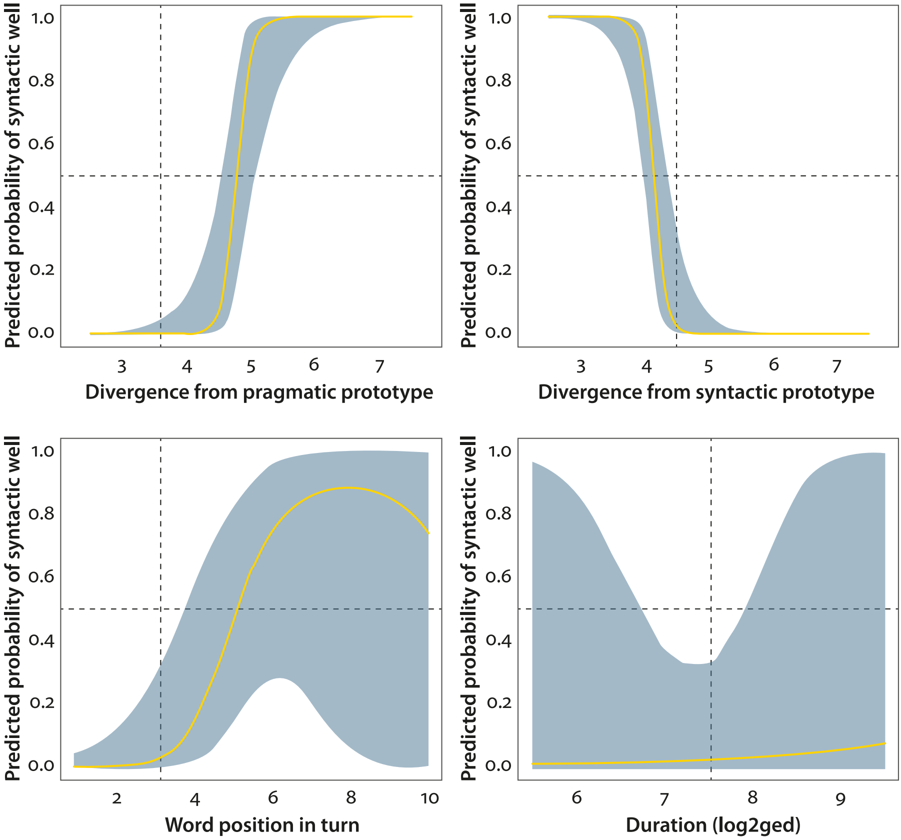

Figure 3. Effects plots of the three variables in the final model and, in the lower right panel, the effect of DURATION if forced into the model against '*AICc*'s recommendation'

As before, the analysis shows very clearly that a monofactorial examination of a predictor of interest is treacherous in how it can make a desired effect appear significant and substantial whereas that effect vanishes once the proper controls are considered. The analysis does show, however, that, besides the position in the turn, the hearer's best bet in figuring out the function of *well* is the lexical context. As mentioned before, we are aware that, said in isolation, this seems more than trivial. However, this finding *is* interesting because our novel psycholinguistically-informed operationalization of lexical context not only scales well, but also provides the analyst with an extremely high degree of predictive power and, thus, statistical control of something as volatile and noisy as lexical context.

4. Discussion

We have approached the multifunctionality of *well* from two perspectives: a production/speaker-focused perspective and a comprehension/hearer-focused perspective. The model fitted for the production perspective suggested that speakers do modulate *well*'s duration depending on the function in which they use *well* in the turn but that effect was weak. The model fitted for the comprehension perspective suggested that hearers probably do not draw on duration to disambiguate functions of *well* much but instead on position in the turn and, even more heavily, on the lexical context in which *well* is embedded. In what follows the implications of the two findings will be considered.

The finding that the lexical context matters a lot when it comes to identifying the function of *well* may seem trivial but the interesting aspect of the approach here is how we used a novel way of gleaning lexical cues from the context without manual annotation of lexical items etc. but in a purely distributional way, namely by determining abstract prototypes of each function of *well* and then determining each usage's divergences from those prototypes (in a way that is perhaps a bit similar to a *k*-nearest-neighbor regression); as the results show, this multidimensional view of context greatly contributed to the two models' overall success: lexical context operationalized this way helps a lot.

The significance of context for the hearer facing the task of disambiguating *well* in turns-at-talk lends substantial support to Hoey's (2005) 6th priming hypothesis, which is concerned with polysemy: as noted, this hypothesis predicts that "[w]hen a word is polysemous, the collocations, semantic associations and colligations of one sense of the word differ from those of its other senses" (Hoey 2005: 13). Polysemy is a semantic concept denoting lexical items that, in context, reveal different semantic senses. Obviously, pragmatic vs. syntactic uses of *well* do not constitute such a case: the distinction is not a semantic one but a functional one. However, polysemy and polyfunctionality are parallel phenomena (or, alternatively, polysemy is one kind of polyfunctionality), sharing the property that one and the same item fulfills two or more tasks depending on the context in which it is used. Thus, our results suggest that Hoey's 6th priming hypothesis can be extended to include not only polysemy but also polyfunctionality, allowing us tentatively to reformulate the hypothesis thus: 'when a word is polysemous *or polyfunctional*, the collocations, semantic associations and colligations of one sense/*function* will differ from those of the other sense/*function*'. We propose this extension with due caution at this point considering that the hard evidence available to support this claim is restricted to a single polyfunctional item, *well*. However, it is tempting to assume that context will be similarly key in disambiguating related polyfunctionals such as, for example, *like*, which also performs multiple syntactic and pragmatic functions (cf. for example Anderson 1998). Clearly, however, this assumption remains to be tested in future research.

The model also showed that a second significant factor is at play in the task for hearers of disambiguating *well* — that of position in the turn: the later *well* occurs in the turn, the more likely it is not a pragmatic *well* but a syntactic one, and, the reverse, the earlier *well* occurs in the turn, the more likely it is to perform a pragmatic function. This finding is of particular interest on two counts. First, it is of interest because POSITION remained significant even when all the information that lexical context had to offer was already accounted for. In other words, skeptics cannot somehow ascribe the effect of POSITION to any ways in which lexical material might be correlated with POSITION because our statistical approach and the inclusion of the collocate-based KL-divergences account for much of that already. Second, the significant contribution of the predictor POSITION also suggests a reading in terms of Hoey's theory of lexical priming, specifically in terms of Hoey's 'textual colligation' hypothesis. This hypothesis is intimately related to a word's *position* in that the hypothesis suggests that "[w]ords (or nested combinations) may be primed to occur (or to avoid occurring) at the beginning or end of independently recognised discourse units, e.g., the sentence, the paragraph, the speech turn" (Hoey 2005: 115). Pragmatic *well*, then, is a prime instance of textual colligation in conversation: particularly in its incarnation as a marker of dispreferreds, pragmatic *well* is heavily primed to occur turn-initially. This finding adds to the small but growing body of items primed for discourse-unit-beginnings in speech, including the positive priming for interjections both at the beginning of turns and of constructed dialog (Rühlemann 2013) and the negative priming for the definite article *the* in turn-initial position (Tao 2003).

The third result of the present investigation is that duration does not significantly contribute to the hearer's task of functionally disambiguating *well* in the turn. This negative result, too, is intriguing because the pragmatic and syntactic uses of *well are* significantly differently long, with pragmatic *well* being *shorter* than syntactic *well* (cf. Rühlemann 2018) if one disregards lexical-contextual and positional effects. This makes an intriguing analog with findings from psycholinguistic work suggesting that 'informativity', defined as a word's contextual predictability, influences a word's acoustic duration: "[a] word that is usually unpredictable has a longer duration than a word that is usually predictable" (Seyfarth 2014: 149; cf. also Aylett & Turk 2004). Now, the present research did not investigate the predictability of *well* itself but rather made use of the collocates of pragmatic and syntactic *well* to compute the KL-divergences from the syntactic and the pragmatic prototype and thus to model how hearers predict, and speakers project, a pragmatic or a syntactic usage. That is, we looked at how the words in the vicinity of *well* suggest either a pragmatic or a syntactic reading of *well* in the turn. This question is altogether different from the question of how predictable the word *well* is as such, regardless of its function in the turn. However, it is tempting to hypothesize that the informativity, understood in the above sense, of pragmatic *well* is *low* given its strong primings both for (initial) position and for a small set of prototypical collocates and that the informativity of syntactic *well* is comparatively high given its overall weaker primings for position in the turn and a broader range of prototypical collocates. However, even if this rather uncertain hypothesis is accepted, we are left with the question as to why duration does not factor into the hearer's function disambiguation (while it does factor into the ways speakers project pragmatic and, respectively, syntactic functions). We would like to offer two tentative explanatory hypotheses.

The first hypothesis is that the functional range of duration as a resource in conversation does not include the disambiguation of polyseme-like items. We know that duration figures among the resources of paralinguistic prosody (Wennerstrom 2001), whose primary purpose is to "achieve an infinite variety of emotional, attitudinal, and stylistic effects" (Wennerstrom 2001: 200). Clearly, disambiguating two distinct senses/functions of a verbal item does not fall into any of these categories. Further, we know that duration plays a role in marking turn completion, where current speakers frequently lengthen the turn-final word/syllable (e.g. Local & Walker 2012) thus giving a 'go-signal' (Barthel *et al.* 2017: 9) to co-participants to launch their pre-prepared response (e.g. Torreira *et al.* 2015). Again, disambiguation is an inherently different task from the task of marking turn completion. On this view, then, both the use of duration as a resource for paralinguistic prosody and the use of duration as a go-signal seem to play out on different levels than that of functional disambiguation. Another explanatory hypothesis is that duration does, at least potentially, play into disambiguation of polysemes or polyfunctionals but its effect can be overpowered by other effects thus rendering it redundant. As a redundant signal, duration need not be useless but can serve as a backup hearers turn to in case other disambiguators fail. Given the 'noisiness' (Aylatt & Turk 2004) of talk in conversation, where ensuring information transfer is a perennial concern, relying on backup resources is essential. The 'reliability' facilitated by signal redundancy is, indeed, deeply inherent to human communication, which has evolved as "a system of systems, where the burden of information can be shifted from one part to another" (Levinson & Holler 2014: 1).

This explanation appears at least initially plausible in the case of *well*, where the effects we observed for position and lexical context were particularly strong. The hypothesis leaves room for the possibility that duration may come out stronger in other disambiguation scenarios such as *like* and *anyway*, whose specific function in the turn may be less determined by lexical context and position. We leave this possibility for future research to test.

5. Concluding remarks

To conclude, this study presented a first attempt at disentangling the factors speakers and hearers in natural conversation draw on in order to disambiguate the ambiguous item *well*, which can be used in a number of syntactic and pragmatic functions. The main results of our analysis are that hearers rely on two resources to decide which of the two main functions *well* performs in the turn, namely position and lexical context; duration was not found to contribute to hearer's function disambiguation of *well*; however, looked at from the production perspective, modulating duration did represent a resource by which speakers project a functional or syntactic understanding of *well*.

Our findings provide substantial support for the theory of lexical priming (Hoey 2005), specifically Hoey's priming hypotheses related to polysemy and textual colligation. We argued that the findings allow us to propose an extension to Hoey's 6th priming hypothesis so as to include not only polysemy but also polyfunctionality. We further argued that *well*, particularly as a marker of dispreferreds, is heavily primed to occur turn-initially, thus representing an exemplary case of textual colligation in speech.

Much uncertainty still surrounds the question as to why duration did not figure among the significant effects hearers draw on to disambiguate *well* although *speakers* do use duration to distinguish *well*'s functions. Despite this puzzle — or because of it — we believe that studying the *acoustic* properties of polysemes and polyfunctional items represents a line of inquiry that is worth continuing in that much insight may still remain to be gained at least in examining other polyfunctionals.

Methodologically, we believe this study also makes two important contributions that have implications for studies going beyond polysemy in particular or polyfunctionality in general. First, using the lexical-context variables as control variables seems to us like an important methodological addition in how it makes the analysis of polyfunctional items or any alternation phenomenon more precise (see Gries 2018) by controlling for whatever information the lexical context of a linguistic choice may contain. Second, the regression analyses of the data from both a speaker and a hearer perspective that include these lexical-context controls make it possible to develop complementary results of the same phenomenon, which is useful because speakers' interests in planning production do not always align with hearers' preferences for comprehension (Arnold *et al.* 2000), something the two-models approach exemplified here can take into consideration for a much wider range of phenomena than the one discussed here.

References

Aijmer, Karin. 2013. *Understanding pragmatic markers. A variational pragmatic approach.* Edinburgh: Edinburgh University Press.

Albert, Saul, Laura E. de Ruiter, & Jan Peter de Ruiter. 2015. CABNC: the Jeffersonian transcription of the Spoken British National Corpus. Available online at saulalbert.github.io/CABNC/

Andersen, Gisle. 1998. The pragmatic marker 'like' from a relevance-theoretic perspective. In Andreas H. Jucker & Yael Ziv (eds.), *Discourse markers: Description and theory*, 147–170. Amsterdam: Benjamins. https://doi.org/10.1075/pbns.57.09and

Arndt, Horst & Richard W. Janney. 1987. *InterGrammar. Towards an integrative model of verbal, prosodic and kinesic choices in speech*. Berlin: Mouton de Gruyter. https://doi.org/10.1515/9783110872910

Arnold, Jennifer E., Anthony Losongco, Thomas Wasow & Ryan Gsintrom. 2000. Heaviness vs. newness: The effects of structural complexity and discourse status on constituent ordering. *Language* 76. 28–55. https://doi.org/10.1353/lan.2000.0045

Aylett, Matthew & Alice Turk. 2004. The smooth signal redundancy hypothesis: A functional explanation for relationships between redundancy, prosodic prominence, and duration in spontaneous speech. *Language and Speech* 47(1). 31–56. https://doi.org/10.1177/00238309040470010201

Baayen, R. Harald, Petar Milin, Dusica Filipović-Đurđević, Peter Hendrix & Marco Marelli. 2011. An amorphous model for morphological processing in visual comprehension based on naive discriminative learning. *Psychological Review* 118. 438–482. https://doi.org/10.1037/a0023851

Barthel, Mathias, Antje S. Meyer & Stephen C. Levinson. 2017. Next speakers plan their turn early and speak after turn-final "go-signals". *Frontiers of Psychology* 8. https://doi.org/10.3389/fpsyg.2017.00393

Bolden, Galina. 2004. The quote and beyond: Defining boundaries of reported speech in conversational Russian. *Journal of Pragmatics* 36. 1071–1118. https://doi.org/10.1016/j.pragma.2003.10.015

Boersma, Paul & David Weenink. 2012. Praat: Doing phonetics by computer [Computer program]. http://www.praat.org/

Brinton, Laurel J. 2010. Discourse markers. In Andreas H. Jucker & Irma Taavitsainen (eds.), *Historical pragmatics*, 285–314. Berlin: Mouton de Gruyter.

Coleman, John, Ladan Baghai-Ravary, John Pybus, & Sergio Grau. 2012. *Audio BNC: The audio edition of the Spoken British National Corpus*. Phonetics Laboratory, University of Oxford. Available online at http://www.phon.ox.ac.uk/AudioBNC

Crowdy, Steve. 1995. The BNC spoken corpus. In Geoffrey Leech, Greg Myers & Jenny Thomas (eds.), *Spoken English on computer: Transcription, mark-up and application*, 224-234. Harlow: Longman.

De Klerk, Vivian. 2005. Procedural meanings of *well* in a corpus of Xhosa English. *Journal of Pragmatics* 37. 1183-1205. https://doi.org/10.1016/j.pragma.2004.11.001

Fraser, Bruce. 1990. An approach to discourse markers. *Journal of Pragmatics* 14. 383-395.

Gries, Stefan Th. Forthcoming. Analyzing dispersion. In Magali Paquot & Stefan Th. Gries (eds.).

Gries, Stefan Th. 2018. The discriminatory power of lexical context for alternations: An information-theoretic exploration. *Journal of Research Design and Statistics in Linguistics and Communication Science* 5(1-2). 78-106. https://doi.org/10.1558/jrds.38227

Gries, Stefan Th. & Philip Durrant. Forthcoming. Analyzing co-occurrence data. In Magali Paquot & Stefan Th. Gries (eds.).

Gravano, Agustín, Julia Hirschberg & Štefan Beňuš. 2012. Affirmative cue words in task-oriented dialogue. *Computational Linguistics* 38(1). 1–39. https://doi.org/10.1162/COLI_a_00083

Heritage, John. 2015. *Well*-prefaced turns in English conversation: A conversation analytic perspective. *Journal of Pragmatics* 88. 88–104. https://doi.org/10.1016/j.pragma.2015.08.008

Hoey, Michael. 2005. *Lexical priming. A new theory of words and language*. London: Routledge.

Holt, Elizabeth. 1996. Reporting talk: The use of direct reported speech in conversation. *Research on Language and Social Interaction* 29(3). 219–245. https://doi.org/10.1207/s15327973rlsi2903_2

Indefrey, Peter & Willem J. M. Levelt. 2004. The spatial and temporal signatures of word production components. *Cognition* 92. 101–144. https://doi.org/10.1016/j.cognition.2002.06.001

Jucker, Andreas H. 1993. The discourse marker well: A relevance-theoretical account. *Journal of Pragmatics* 19(5). 435-452. https://doi.org/10.1016/0378-2166(93)90004-9

Levinson, Stephen C. 1983. *Pragmatics*. Cambridge: CUP. https://doi.org/10.1017/CBO9780511813313

Levinson, Stephen C. 2013. Action formation and ascription. In Jack Sidnell & Tanya Stivers (eds.), *The handbook of conversation analysis*, 103-130. Oxford: Wiley Blackwell.

Levinson, Stephen C. & Judith Holler. 2014. The origin of human multi-modal communication. *Philosophical Transactions of The Royal Society* 369. 20130302. https://doi.org/10.1098/rstb.2013.0302

Levinson, Stephen C. & Francisco Torreira. 2015. Timing in turn-taking and its implications for processing models of language. *Frontiers in Psychology* 6. 731. https://doi.org/10.3389/fpsyg.2015.00731

Lester, Nicholas A. 2017. The syntactic bits of nouns: How prior syntactic distributions affect comprehension, production, and acquisition. Santa Barbara, CA: University of California PhD thesis.

Liddicoat, Anthony J. 2007. *An introduction to conversation analysis*. London: Continuum.

Milin, Petar, Dusica Filipović-Đurđević & Fermín Moscoso del Prado Martín. (2009). The simultaneous effects of inflectional paradigms and classes on lexical recognition: Evidence from Serbian. *Journal of Memory and Language* 60. 50–64. https://doi.org/10.1016/j.jml.2008.08.007

Paquot, Magali & Stefan Th. Gries (eds.). Forthcoming. *Practical handbook of corpus linguistics*. Berlin: Springer.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. 1985. *A comprehensive grammar of the English language*. London: Longman.

Rayson, Paul, Geoffrey Leech & Mary Hodges. 1997. Social differentiation in the use of English vocabulary: Some analyses of the conversational component of the British National Corpus. *International Journal of Corpus Linguistics* 2(1). 133–152. https://doi.org/10.1075/ijcl.2.1.07ray

Renwick, Margaret E. L., Ladan Baghai-Ravary, Rosalind Temple & John S. Coleman. 2013. Assimilation of word-final nasals to following word-initial place of articulation in UK English, INTERSPEECH-2013, 3047–3051. Available online at www.isca-speech.org/archive/archive_papers/interspeech_2013/i13_3047.pdf

Romero-Trillo, Jesús. 2015. Prosodic modeling and position analysis of pragmatic markers in English conversation. *Corpus Linguistics and Linguistic Theory* 14(1). 169–195. https://doi.org/10.1515/cllt-2014-0026

Rühlemann, Christoph. 2013. *Narrative in English conversation: A corpus analysis of storytelling*. Cambridge: CUP. https://doi.org/10.1017/CBO9781139026987

Rühlemann, Christoph, Andrej Bagoutdinov & Matthew B. O'Donnell. 2015. Modest XPath and XQuery for corpora: Exploiting deep XML annotation. *ICAME Journal* 39. 47–84. https://doi.org/10.1515/icame-2015-0003

Rühlemann, Christoph. 2018. How long does it take to say 'well'? Evidence from the Audio BNC. *Corpus Pragmatics* 3(1). 49–66. https://doi.org/10.1007/s41701-018-0046-y

Sacks, Harvey, Emanuel A. Schegloff & Gail Jefferson. 1974. A simplest systematics for the organisation of turn-taking for conversation. *Language* 50(4). 696–735. https://doi.org/10.1353/lan.1974.0010

Schegloff, Emanuel A. & Gene H. Lerner. 2009. Beginning to respond: *Well*-prefaced responses to *wh*-questions. *Research on Language and Social Interaction* 42(2). 91-115. https://doi.org/10.1080/08351810902864511

Schiffrin, Deborah. 1987. *Discourse markers*. Cambridge: CUP. https://doi.org/10.1017/CBO9780511611841

Schnur, Tatiana T., Albert Costa & Alfonso Caramazza. 2006. Planning at the phonological level during sentence production. *Journal of Psycholinguistic Research* 35. 189–213. https://doi.org/10.1007/s10936-005-9011-6

Seyfarth, Scott. 2014. Word informativity influences acoustic duration: Effects of contextual predictability on lexical representation. *Cognition* 133(1). 140–155. https://doi.org/10.1016/j.cognition.2014.06.013

Stein, Dieter. 1985. Discourse markers in Early Modern English. In Roger Eatono, Olga Fischer, Willem Koopman & Frederike van der Leek (eds.), 283–303. Amsterdam: Benjamins.

Stivers, Tanja, Nick J. Enfield, Penelope Brown, Christina Englert, Makoto Hayashi, Trine Heinemann, Gertie Hoymann, Federico Rossano, Jan Peter de Ruiter, Kyung-Eun Yoon & Stephen C. Levinson. 2009. Universals and cultural variation in turn-taking in conversation. *Proceedings of the National Academy of the Sciences. U.S.A.* 106(26). 10587–10592. https://doi.org/10.1073/pnas.0903616106

Tao, Hongyin. 2003. Turn initiators in spoken English: A corpus-based approach to interaction and grammar. In Pepi Leistyna & Charles F. Meyer (eds.), *Corpus analysis: Language structure and language use*, 187–207. Amsterdam: Rodopi.

Torreira, Francisco, Sara Bögels & Stephen C. Levinson. 2015. Breathing for answering: The time course of response planning in conversation. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2015.00284

Wennerstrom, Ann. 2001. *The music of everyday speech: Prosody and discourse analysis*. Oxford: OUP.

Zipf, George K. 1949. *Human behavior and the principle of least effort: An introduction to human ecology*. Cambridge, MA: Addison-Wesley Press.

Address for correspondence

Christoph Rühlemann
Albert-Ludwigs-Universität Freiburg
Deutsches Seminar – Germanistische LinguistikPlatz der Universität 3
79085 Freiburg
Germany
christoph.ruehlemann@germanistik.uni-freiburg.de

Co-author information

Stefan Th. Gries
University of California, Santa Barbara
Department of Linguistics
stgries@linguistics.ucsb.edu