



Stressed pronouns in spontaneous English

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Abstract

The placement of pitch accents within intonation phrases in English is conditioned a.o. by the information structure of an utterance. While words which are referentially given are unstressed, new or contrasted items can carry pitch accents and nuclear stress. Pronouns are given and do not carry stress, unless they are contrasted.

The present paper presents an analysis of spontaneous speech by 6 monolingual and 12 bilingual speakers of English which provides insight into stressability of pronouns in English. 23,5% of the pronouns within the narrations of our participants were realised in their strong form and stressed. While a considerable amount of these stressed pronouns were indeed used to express a contrast, additional factors, such as prosodic phrasing, showed to be also relevant for stress assignment of pronouns.

Index Terms: English, spontaneous speech, prosody, stress, pronouns, information structure.

1. Introduction

In English, function words, such as pronouns, can be realized either in a „strong“ i.e. stressed form or a „weak“ i.e. unstressed form, depending on the context ([1]). Strong variants are produced with full vowels and can form a prosodic word (PWd) ([1]). The weak version is produced with vowel reduction, syllabified consonants and the loss of onset /h/ ([1]). In addition, pronouns are expressions for given information and thus their weak unstressed form is licensed by information structure ([2]). Following [1], there are three possibilities for pronouns to appear in their stressed form: if in focus (where potential alternatives need to be excluded ([3],[2])), in isolation, or in phrase final position. Phrase final object pronouns form a special category as they can appear in either the strong form as phrase final PWd (1) or in the weak form as a prosodic clitic (2). For English, it is still an open issue, what determines this variability in stress assignment on phrase final pronouns.

(1) I need *YOU*.

(2) I'll see *ya*.

While some research on stressed pronoun interpretation in on-line processing tasks with regard to focus marking has been established for the case of English with both adults and children (e.g. [4]), little research has focused on stressed pronoun production in spontaneous speech. Looking at accentuation patterns on pronouns and proper names in spontaneous speech, [5] analysed 20 minutes of spontaneous narrative in American English. Noun phrases (NPs) were annotated for form of referring expression and grammatical function. They considered the dissonance between the prosodic marking and the grammatical function of given and new referents. Given constituents are usually deaccented and grammatical subjects generally represent given constituents. Therefore it was

expected to find NPs in subject position to be de-accented compared to accentuation of NPs in direct object position. At the same time, considering the givenness of pronouns and the more informative nature of proper names, pronouns were expected to be de-accented and proper names to be accented. They did find, however, 27,5% of the subject pronouns to be accented, while 50% of the object proper names were de-accented. They conclude that if grammatical function and form of referring expressions convey conflicting information status the accentuation must agree with the information status of the form, i.e. pronouns in object position must be de-accented. If, however, a referring expression is used in its preferred position, accenting can be used to indicate linguistic information on top of information status, e.g. topic shift. With regard to the accentuation of pronouns these findings contribute in the following way: a) information status and information structure determine whether a pronoun can be accented, and b) accentuation of a pronoun as topic in subject position, i.e. in the pre-nuclear domain seems more frequent than expected.

Recent research suggests other factors than information structure to contribute to the accentuation of pronouns. In a corpus study on the intonation of yes-no questions in American English, optional accentuation of post-nuclear tails was found. [6] annotated and analyzed a corpus of spontaneous telephone conversations of American English for intonation and semantic-pragmatic meaning. While this research mainly contributed to the research on question contours, it also revealed an optional accentuation pattern on phrase final pronouns forming the post-nuclear tail. The authors suggest that these pronouns receive an accent if their rising pitch accent (PA, given the rising question intonation) is independent from the nuclear accent. However, the post-nuclear pronouns were accented although not in focus and even if their referent had just been introduced in the immediately preceding context (i.e. no shift of attention).

The current study contributes to this debate by showing that stressed pronouns occur frequently in spontaneous discourse, across speaker groups with different language backgrounds as well as within narrations from both formal and informal situations. The data which serves as the basis are presented in section 2. As will be seen, many observed occurrences of stressed pronouns presented in section 3 can be captured by information structural constraints especially in cases of contrast. We will show in section 4 that next to information structure the relevant aspect for the stressability of pronouns is prosodic phrasing, not only phrase finally but also in the prenuclear domain.

2. Method

2.1. Data

The data analyzed here were elicited in a research group addressing different language contact situations ([7]) and form part of a growing corpus investigating language use by bilingual

speakers in different heritage settings in Germany and the US. Monolingual data are elicited for comparison reasons. We concentrate on the English data here, comprising both monolingual English and dominant English by Russian, Greek and Turkish heritage speakers.

In two pilot studies, naturalistic repertoire data were elicited in one-to-one elicitations by means of presenting participants with a fictional incident (i.e. a traffic accident involving a bicycle presented by means of pictures in pilot study I, and an accident involving several pedestrians and two cars presented by means of a video in pilot study II, <https://osf.io/szfhd/>). Participants were asked to imagine themselves as a witness to this accident and to report on it while imagining talking to a close friend i.e. informal situation (is) and a police officer i.e. formal situation (fs) (for details on methodology, see e.g. [8]).

In pilot I, narrations from 12 bilingual English speakers, with different heritage backgrounds (Turkish=3, Russian=4, Greek=5) were collected. Speakers were between 25 and 35 years of age (male=3). The narrations have an approximate average duration of 23,3s each. In pilot II, using the same protocol with a 1min video as stimuli, data from 6 male monolingual English speakers were collected. The narrations have an approximate duration of 69,6s each. Altogether, 134 instances of stressed pronouns occurred which form the basis for the analysis and discussion.

2.2. Data screening and annotation

In a first step, all narrations were transcribed and segmented into intonational phrases along the cross-linguistically relevant phonetic cues cited in ([9]). Personal and anaphoric pronouns and their possessive forms uttered by the speakers were located. Pronouns which were perceived to be prominent beyond the use of their strong form were identified by the first author of this study using an audio-visual analysis considering phonetic information (e.g. pitch, loudness) provided by the speech analysis tool Praat ([10]). To capture differences in prominence three categories which have previously been suggested for German (cf. [11]) were distinguished: weak (1), strong (2) and extra strong prominence (3). Prominence level 1 was assigned if a reduced prominence was perceived on the strong form of the pronoun, which could be rhythmically or tonally conditioned. In general, PAs co-occur with a prominence level 2, and extra strong prominence was assigned in cases of emphatic realisation with optional hyperarticulation. The term “stressed pronoun” is used here to refer to any pronoun with at least a level 1 prominence assigned. The respective numeral indicating the level of prominence is given as a subscript accompanying the capitalised stressed syllable in the examples below. Those intonation phrases containing a stressed pronoun and the immediate surrounding were considered for further analysis.

For information status, the stressed pronouns and their antecedents were categorised along the RefLex Scheme ([12]). The following labels were assigned: r-given, r-given-displaced, and r-given-sit. Third person pronouns received either the label r-given or r-given-displaced. They are considered displaced if the preceding co-referent did not occur within the previous five IPs. This label was included to account for stress in cases of shift of attention. Pronouns of the first and second person received the label r-given-sit, since they can be used as means of symbolic deixis for an immediately present referent.

Additionally, stressed pronouns were considered in their context and categorized following the contrast categories

proposed in [13], taking correction and contrast relations into consideration (and leaving the categories answers and association with focus aside as they did not occur in the data).

3. Overall occurrence of stressed pronouns

The overall number of pronouns in the 36 narrations was 596. There were more pronouns uttered in formal ($n_f=313$) compared to informal situations, with a tendency of more pronouns and also more stressed pronouns to occur in longer utterances. The formal narrations were overall longer (mean length: in PI $t_f=28,8s$, $t_s=24,8s$; and in PII $t_f=86,0s$, $t_s=53,1s$).

Of the 596 pronouns, 134 pronouns were analyzed as being stressed to varying degrees. The overwhelming majority of the stressed pronouns were analyzed as carrying weak prominence ($n_1=103$). Only one instance of extra strong i.e. emphatic prominence on a pronoun was found. The remaining 30 were analyzed as carrying strong prominence.

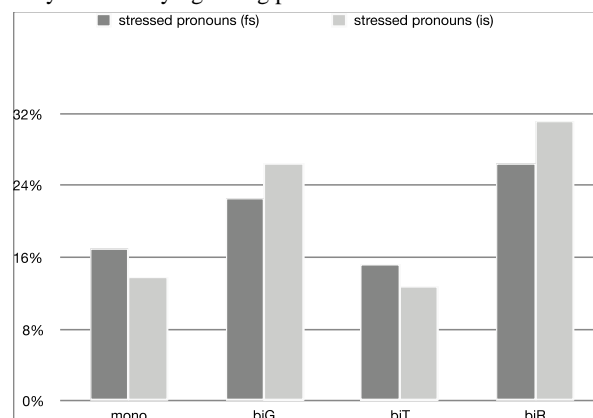


Figure 1: Occurrence of stressed pronouns in the two situations across speaker groups

Stressed pronouns were used by speakers of all four English speaking groups. There is a difference between the speakers with different language backgrounds. Figure 1 shows less stressed pronouns in the English productions by monolingual (mono) and Turkish bilingual (biT) speakers, while there were more pronouns and also stressed pronouns occurring in the narrations by Greek (biG) and Russian (biR) bilinguals. The percentage of stressed pronouns is given in relation to the number of unstressed pronouns uttered within each speaker group. This difference in frequency is not relevant to our analysis of categories of stressed pronoun instances. We want to focus on their occurrence in spontaneous narrations across all English speaking groups.

3.1. Prosodic phrasing

Most of the stressed pronouns occurred at the edge of an IP. In 52,2% (i.e. 70) of the cases, stressed pronouns occurred IP-initially and in 11,9% (i.e. 16) IP-finally. 9,0 % (i.e. 12) of the stressed pronouns were phrased separately aligned with both edges of an IP. In these positions, the pronouns co-occur with boundary phenomena, e.g. phrase final lengthening or phrase initial strengthening, contributing to the perception of prominence.

4. Analysis

4.1. Information structure

All occurring pronouns were referentially given. Stressed pronouns of the first and second person, annotated as r-given-sit, were most frequent ($n_{sit}=72$). Of the 62 stressed pronouns of the third person, annotated as r-given, only 6 were annotated as displaced, i.e. a distance of 5 IPs away from their antecedent. This small number suggests that the distance to the antecedent does not seem to be a strong factor as e.g. in shift of attention.

Table 1: *Distribution of information structure of stressed pronouns over the two situations.*

	<i>Contrast</i>	<i>Topic (including contrastive topic)</i>
<i>informal</i>	29	48
<i>formal</i>	23	53
<i>total</i>	52	101

As expected, a large number of the stressed pronouns expressed some form of contrast (in the definition of [14]). An example of a contrastive framesetting pronoun is given in (3), and an example of a contrastive focus is given in (4). 44 of those 50 occurrences involving contrast expressed a contrastive topic, as illustrated in (5).

(3) Monolingual, formal situation:

(i can't imagine there was much damage it wasn't really uhm)
[in *MY*₂ opinion] [a *BIG* *IN*cident]

(4) Monolingual, informal situation

(the guy that was like with the baby an the lady went over to the lady with her groceries who had a dog 'n' was like helpin the lady pick up her groceries) ((...)) (the guy that was with the lady an the dog went over to the two guys that were in the accident)

[and *STAR*ted helping *THEM*₂ out *TOO*]

(5) Monolingual, informal situation:

(there's a this guy and this lady with a baby on the right side of the parking lot and this lady unloading her groceries on the left side)

[and *SHE*₁ had this *DOG*]

The occurrence in a context of contrast explains the occurrence of some form of prominence on pronouns, as contrast is frequently expressed through prosody, most notably PAs, in English. Thus, the prosodic correlates of information structure overwrite the prosodic correlates of information status in these examples.

4.2. Phrasing

Of the remaining 82 stressed pronouns whose prominence cannot be explained by means of contrast, 11 were realized in independent prosodic phrases. Examples are given in (6) and (7), where (6) shows an aboutness topic phrased separately, and (7) shows a topic constituting a superset phrased separately.

(6) Monolingual, informal situation

(these two cars were coming towards those people and)

[*THEY*₂] [*KIN*da *AL*most *SOR*ta] [*HIT* them]

(7) Monolingual, formal situation

(female was pushing a stroller and the male was walking along side her tossing up a soccer ball)

[*THEY*₂] [made a *RIGHT*] [to *CROSS* the *STREET*]

19 stressed pronouns occurred in a small IP, i.e. the stressed pronoun was accompanied by another function word. In both these phrasing contexts, independent phrases and small phrases, the pronoun would be expected to carry some prominence it constituting the head of the prosodic phrase in the absence of other lexical constituents.

33 further stressed pronouns occurred phrase initially, a position in which initial strengthening phenomena occur ([14]) and might add to the perception of prominence. In these cases, and also with phrase-medially occurring stressed pronouns, a nuclear accent would be realized later in the phrase. Constituents preceding a nuclear accent can be realized with what [15] calls an ornamental accent. An example is given in (8), which suggests that ornamental accents might also occur on pronouns.

(8) Male Greek heritage speaker, formal situation

(the woman was riding her bike across th/ across the uh the road)

[and it *LOOKS* like *SHE*₁ got *HIT*]

(by a guy in a dark blue small car)

16 stressed pronouns occurred in phrase-final position, examples are given in (9) and (10), where they formed the complement of a prepositional phrase in 9 cases.

(9) Female Russian heritage speaker, formal situation

(but he came out of the car)

[and started *HEL*ping *HER*₁]

(10) Monolingual speaker, formal situation

(the man that was with the lady an the baby went over to the men and uh)

[*STAR*ted *di**SC*ussing with *THEM*₁]

Also at the right edge of prosodic phrases, boundary phenomena have been observed, such as preboundary lengthening, which might lead to increased perceived prominence.

5. Summary of analysis

The majority of stressed pronouns fall into a category of contrastive expressions ($n_{contrast}=52$ i.e. 38% of the stressed pronouns). The remaining instances of stress on pronouns can be attributed to phrasing. While in small IPs and at the right edge of an IP (together 46 instances, i.e. 34%) this has already been discussed by [1] there is a considerable number of stressed pronouns in IP initial position (i.e. 25%) which seem to occur frequently in spontaneous speech.

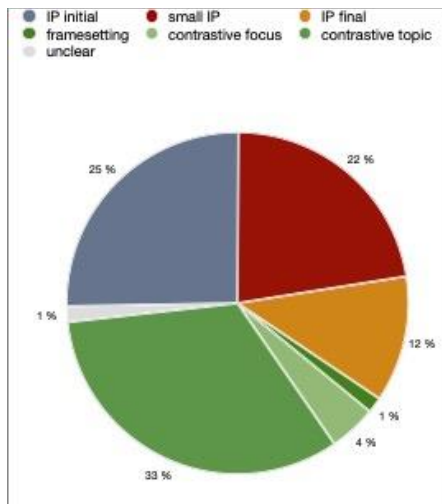


Figure 2: Distribution of the stressed pronoun categories

6. Discussion

The considerable number of stressed pronouns that was found in our corpus of spontaneous English suggests that stressed pronouns occur fairly frequently in spoken English of both monolingual and bilingual (English-dominant) speakers. First impressions from a more detailed look according to different bilingual speaker groups seem to suggest a difference depending on the heritage language spoken, with Turkish heritage speaker using less pronouns and less stressed pronouns as opposed to Greek and Russian heritage speakers, thereby patterning more with the English monolingual comparison group. However, this topic awaits further research, taking language-specific aspects of the respective pronominal and prosodic systems into consideration.

Nearly all occurrences of stressed pronouns can be accounted for by aspects of either information structure or phrasing. In terms of information structure, many stressed pronouns occur in the context of contrast for which it is not surprising (for both topics and foci) to have prosody marking this additional pragmatic information. It might be noteworthy in this regard that not all pronouns used in contexts of contrast have been realized with strong prominence (i.e. prominence level 2 being associated with PAs) as one might have expected. Only 30 instances of level 2 pronouns are opposed to 50 instances of contrast.

With respect to phrasing, our data has shown that the size of the prosodic phrase in which the pronouns occur seems to matter: when stressed pronouns were phrased separately or occurred in small IPs (i.e. with only the pronoun and some other function word), some prominence is predicted to occur due to prosodic wellformedness considerations which necessitate that every phrase has a head and where some prominence can be anchored to this head ([16]). In small IPs, the prominence which marks the head of a phrase can be expected to be on the pronoun rather than the function word. Similarly, stressed pronouns which occur as complements in prepositional phrases are comparable to those found in the spontaneous German data analysed by [18]. For these cases, it has been argued that pronouns are stressed similar to fully realised lexical NPs.

Our data further showed that phrasal edge positions are conducive for stress. Stressed pronouns frequently occurred at either the initial or final edge of a phrase, two positions in which boundary-related processes, such as strengthening or

lengthening are known to occur which contribute to perceived prominence. A question here might rather be why pronouns do not always occur in their strong form in these positions but alternate between strong and weak forms, an optionality already pointed out by [1]. For this question, a further look at the unstressed pronouns in the corpus would be needed and a comparison of the prosodic, syntactic and pragmatic contexts in which the two variants occur.

Lastly, even in phrase-medial position stressed pronouns were found and the perceived prominence was suggested to be captured by reference to ornamental accents in pre-nuclear position, also occurring on pronouns.

By contrast, the analysis of stressed pronouns' information status (r-given versus r-given-displaced) did not provide strong evidence for the relevance of the phonological distance to the antecedent i.e. their prominence cannot be explained by means of a shift of attention in the narration. Pronouns were stressed disregarding the number of IPs between them and their preceding co-referent.

A further aspect not yet investigated further is the influence of global intonational patterns typical for spontaneous narratives on the occurrence of stressed pronouns. The stress on phrase final pronouns might result from phrase accents used to list sequent events. A tonal pattern similar to the one described by [6] with a high phrase accent has been described for indicating a connection with the subsequent discourse [17]. A prosodic analysis of the surrounding IPs could provide insight into effects of continuity or list intonation which could hint at a tonal condition for the accentuation of phrase final object pronouns, which further research would have to address.

To sum up: Stressed pronouns are found frequently in spontaneous English by mono- and bilingual speakers. The occurrence of stressed pronouns can be accounted for by reference to information structure (here: contrast) and aspects of prosodic phrasing, with only 2 cases out of 134 which could not be accounted for in that way. Further research would need to look at quantitative differences between different speaker groups and registers. Furthermore, in order to shed more light on the optionality of unstressed and stressed pronouns in contexts not governed by information structure, a close comparison with unstressed pronouns might reveal more concerning other factors influencing the occurrence of stressed pronouns.

7. Acknowledgements

This research forms part of the Research Unit „Emerging Grammars in Language Contact Situations: A Comparative Approach (FOR 2537), funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), project number(s) 39482131.

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