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## **Pitch Prominence in Maltese English**

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**Abstract**

In languages with lexical stress and post lexical accents, tones usually are either associated with the stressed syllable of the word (pitch accents) or are associated with the edge of a phrase (boundary tones). For Maltese it has been shown that there is an  $f_0$  peak on the initial unstressed syllable of wh-words in direct questions, associated with the left edge of the wh-word, even if the stressed syllable is multiple syllables away from the initial syllable. This pitch peak on wh-words did not occur in indirect or quoted questions. The existence of a pitch peak associated to the phrasal edge of a word on an initial unstressed syllable as a function of sentence modality makes Maltese typologically rare. This phenomenon of the word initial pitch peak has been called early peak or early H peak, with a tendency to analyze it as non-accentual, although, research to date has not yet exactly defined early H peaks and which function they fulfil. Past research mostly investigated Maltese. However, there are indications that early H peaks might also occur in Maltese English, which is the contact variety of English and Maltese. This study intends to provide data and preliminary analyses that help to shed further light on these early H peaks in Maltese English. Contrary to past research on the early H peak in Maltese, that used speech data produced in a laboratory setting, the corpus of this study was generated from a TEDx Talk and hence provided semi-spontaneous speech that is not recorded for the purpose of research. Based on a quantitative and supplementary analysis, the study concluded that Maltese English has non-accentual early H peaks. The early H peaks often occur on function words preceding a content word, suggesting that the domain of association might be larger than the lexical word on the prosodic level.

**Key words**

Maltese English, English variety, Maltese, intonational phonology, pitch prominence, prosody, edge tones, pitch accents

## **1. Introduction**

Maltese English is the contact variety of English and Maltese. Previous research identified and established distinguishing characteristics from Standard English, supporting that Maltese English is a variety on its own. Past research often focused on phonetic and phonological features, finding characteristic pronunciation and transfer from Maltese vowel or consonant inventory to Maltese English. More recent research also started to focus on intonational characteristics of Maltese English (Vella 1995, Grech & Vella 2018). There is evidence that Maltese English intonation is influenced by the intonation of Maltese (Vella 1995: 247). Recent findings, mainly from research in Maltese, indicate that pitch prominence in Maltese English might be an interesting topic, distinguishing Maltese English from other varieties of English. These findings in the intonation of Maltese will be further set out in section 1.2.

This thesis intends to shed further light on pitch prominence in Maltese English. It is part of a research project on Maltese English intonation. The thesis is organized as follows. Chapter 1 gives background information on the topic and its connected matters. Section 1.1 provides general information on intonation and its functions. Section 1.2 introduces the topic of this thesis and presents past research that led to the assumption that pitch prominence in Maltese English might be worthwhile to investigate. Section 1.3 presents information on Maltese and Maltese English. Section 1.4 introduces the study that is carried out in this work. The next chapter 2 outlines the methods of the study. In chapter 3 results of the data analysis will be presented. A discussion of the results is given with chapter 4. Final conclusions will be drawn in chapter 5.

### **1.1 Intonation**

Before the topic of this thesis is outlined in section 1.2, a brief overview on intonation and its functions is given. This overview is required for further description of specific intonation systems, such as the one of Maltese English. This section also states how terminology is used in this work because terms like stress and accent get used in different manners. The term intonation is used synonymously with prosody in a broader sense, including not only tonal movement, but also subjects like highlighting, phrasing, and rhythm. This work will only focus on intonation in intonation languages, where tonal movement operates only on the suprasegmental level, but not on the segmental level (Grice & Baumann 2007: 32). In other words, in intonational languages a tonal movement on a word does not change its lexical meaning. Whereas in tone languages like Thai or

Standard Chinese the opposite applies and a rising versus a falling tone contour on a word changes its lexical meaning (Grice & Baumann 2007: 32). Accordingly, intonation refers to events on the suprasegmental level (Cruttenden 1997: 1). The suprasegmental level is associated with pitch contours and intonational grouping on the utterance level (Cruttenden 1997: 1). An utterance consists of one or more words (Cruttenden 1997: 1). Those words in an order that an utterance consists of, or precisely those segments the words consist of build the segmental level (Cruttenden 1997: 1). These two levels operate together in spoken language. Another term for suprasegmental level is post lexical level and for segmental level is lexical level.

Intonation has two functions: 1. Highlighting on the post lexical level and 2. phrasing on the post lexical level (Grice & Baumann 2007: 27). First, we address the function of highlighting. Highlighting means that words or syllables on the post lexical level are more prominent in comparison to others (Grice & Baumann 2007: 27). Enhancement can be reached through modulation of three parameters: strength, loudness, and pitch, which are used to differing degrees in different languages (Grice & Baumann 2007: 27f.). We can differentiate between abstract prominence on lexical level (lexical stress) and concrete prominence on post lexical level (pitch accent) (Grice & Baumann 2007: 27f.). First, we outline lexical stress. Lexical stress means, that within one word (this only applies to polysyllabic words) one syllable is relatively prominent in comparison to others (Välimaa-Blum 2005: 157; Cruttenden 1997: 13.ff.). A stressed syllable or rather the vowel of the stressed syllable is lengthened, louder and has a higher pitch compared to an unstressed syllable in the word (Välimaa-Blum 2005: 157). Throughout this work, I use the term stress solely to refer to lexical stress and not for prominence phenomena on post lexical level, for a clearer distinction. Related to the topic of lexical stress is the topic of rhythm. Rhythm is “[...] the ordering of prominent and non-prominent elements in the flow of a person’s speech” (Grech & Vella 2018: 210). Rhythm is evoked by durational components, as a central point, together with pitch and intensity in perception (Grech & Vella 2018: 203). The ordering of stressed and unstressed syllables may result in a specific rhythmic pattern that could be language characterising (as it may be the case in Maltese English) (Grech & Vella 2018: 203).

Now we turn to the aspect of pitch accents. The highlighting function on the utterance level means to cue prominence on elements of an utterance due to accentuation. This means for stress languages such as English: “In stress languages, the prominence of a word is always marked by postlexical pitch accent (i.e., marking the head of the word),

but not often by marking the edge of the word” (Jun 2014: 446). If a word receives a concrete prominence on the post lexical level, the stressed syllable of the word is the potential place for the pitch accent (Grice & Baumann 2007: 28). Or put differently the lexical stressed syllable is the potential place for a pitch accent on the post lexical level. For some cases, for example due to rhythmic reasons when stressed syllables of two words clash, there can be a stress shift and this can result in a usually unstressed or secondary stressed syllable bearing an accent (Grice, German & Warren 2021: 287, Välimaa-Blum 2005: 204 f.). The term pitch accent signifies that a word is relatively prominent in comparison to others on the utterance level due to a tonal movement (Cruttenden 1997: 17ff.). A pitch accented syllable has tonal movement on or near it (Grice & Baumann 2007: 28). The last pitch accent of a phrase is the nuclear accent which is usually perceived as the most prominent in the phrase (Grice & Baumann 2007: 28).

Which word is highlighted on the post lexical level is dependent on information structure (Grice & Baumann 2007: 34). Information structure is the expression of givenness of an element within a (particular) part of the discourse and the division into focus and background of an utterance (Grice & Baumann 2007: 34). In addition a speaker decides which aspects will be highlighted based on the givenness of information and the intention (Grice & Baumann 2007: 34ff.). There seems to be a correlation between used pitch accent type and givenness:

A high accent is used for new information, and a step down in pitch onto the accented syllable for information which is not totally given but, rather, accessible. No accent at all is used for totally given information. (Grice & Baumann 2007: 35)

From the aspect of givenness a totally/fully given information, hence does not receive an accent, while a new information gets accented. The division into focus and background is “based on the structure of the previous discourse and the intentions of the speaker” (Grice & Baumann 2007: 35). Even though there is a relation between the two dimensions, they are independent of each other. An already given information for example, can get accented due to the focus of an utterance (Grice & Baumann 2007: 35). This can be exemplified with example 1. Here *PASta* in the answer of speaker B receives an accent on the lexical stressed syllable of the word (capitalized), due to focus, even though it is as given in the discourse, as the preceding and following elements of the sentence. The focus is set on *PASta*, which is the important information in the intention of the speaker.



- (1) A: Do you want pasta or pizza for dinner?  
B: [I want]<sub>background</sub> [PASta]<sub>focus</sub> [for dinner]<sub>background</sub>  
given given given

There are three focus conditions: 1. broad focus 2. narrow focus and 3. contrastive focus (Grice & Baumann 2007: 36f.; Gussenhoven 2007: 3). Example 1 illustrates narrow focus, where only one element is focussed (Grice & Baumann 2007: 36). Narrow focus also means *pasta* is accented irrespectively of its givenness (Grice & Baumann 2007: 36). In broad focus more than one element is in focus, but only one or for some languages more of these elements (the so-called focus exponent(s)) receive an accent (Grice & Baumann 2007: 36). This phenomenon is called focus projection (Grice & Baumann 2007: 36). In example 2 broad focus is illustrated. Every information in the utterance of B is new and there is no special focus on one element through the discourse given. So, every element is in equal focus and equally new. In this example, the element *SATurday* serves as a focus exponent and receives an accent, while the other elements are in background.

- (2) A: How are you doing?  
B: Quite good. [I went hiking in the Highlands]<sub>background</sub> [on SATurday]<sub>focus</sub>  
new new

Which element and how many elements serve as focus exponents in the case of focus projection is language specific (Grice & Baumann 2007: 36). In English the last argument is favoured to serve as a focus exponent (Grice & Baumann 2007: 36). But also, semantic weight influences accentuation (Grice & Baumann 2007: 36). Semantically light words, such as pronouns, are less favoured to receive an accent in broad focus than words with greater semantic weight (Grice & Baumann 2007: 36). Contrastive focus (or sometimes corrective focus) is often described to be the result of an information getting accented as a correction of a wrong information (Gussenhoven 2007: 3). In example 3 *SATurday* in the utterance of B receives an accent as a correction to the wrong information in the utterance of A.

- (3) A: So, we are meeting for karaoke on Friday.  
B: No. [We are meeting for karaoke]<sub>background</sub> [on SATurday]<sub>contrastive focus</sub>  
given new

Contrastive focus is often put in contrast to neutral focus which broad and narrow are thought to be (Gussenhoven 2007: 3). This position was called into question. But “[...] ‘contrastive’ focus may actually be expressed differently from ‘neutral’ focus” (Gussenhoven 2007: 3). Research investigated if there is a mapping between pitch accent type use and focus condition in German and stated that there is no one-to-one mapping (Grice et al. 2017: 106). However, they found that parameters such as tonal onglide, f0 peak alignment and target height are modulated in the same direction and for example, the f0 peak is aligned later for contrastive focus than for narrow focus (Grice et al. 2017: 90). The crucial finding is:

Some speakers’ productions lead to a categorical distinction (reflected in the analysis as a different pitch accent category), others being more subtle (resulting in no difference in the assigned category). What is particularly striking is that regardless of the mapping onto proposed categories, all speakers show the same relative pattern.

This finding is striking in the understanding of focus structure and use of intonation in different focus conditions.

In a pragmatic understanding of language, the association of pitch accents and implied focus conditions can change the meaning of a sentence. An often-given example that is trending on social media is the sentence in example 4.

(4) I didn’t say we should kill him.

In broad focus, so in an unmarked case, probably the word *kill* would receive a pitch accent, being the last constituent with semantic weight (the pronoun is semantic light and therefore less favoured). The accent is, bearing in mind the findings mentioned above, likely to be an accent with an earlier f0 alignment. But if you place the accent on *I*, the pragmatic meaning changes from an unmarked case to a marked case and it sounds more like a contrastive information, indicating that somebody else did say it (so I in contrary to somebody else). If the accent gets placed on *say* it sounds like it was not directly said, but maybe implied differently. If the accent gets placed on *we*, the plan was not to kill the person with the conversation partner, but with somebody else. If a pitch accent with a later f0 alignment gets associated with *kill*, it wasn’t the plan to kill anybody. And if the accent gets placed on *him*, probably the wrong person was killed.

Second, we now address the phrasing function of intonation. Utterances get divided into chunks (Grice & Baumann 2007: 29). Phrasing most obvious is expressed through silent pauses (the longer the pause the stronger the perceived boundary), but also through

abrupt pitch changes on unstressed syllables and a resulting contour (Grice & Baumann 2007: 29). A daily life example of phrasing and its function can be found in the often-uttered sentence ‘commas can save lives’, to explain why punctuation is important. One of the most used examples is the sentence in example 5a and 5b with different punctuation:

(5a) Let’s eat, Grandma.

(5b) Let’s eat Grandma.

The exact same sentence can be understood differently with different punctuation. The sentence can be understood as eating with the grandma or eating the grandma, based on the set punctuation and the structuring. But what really saves the grandma’s life is not the comma itself, but the phrasing, that is entailed with it. If read out the sentence loudly, it gets chunked into different phrases. The sentence itself is ambiguous and it gets disambiguated with phrasing. In example 5a, the sentence is realised as two phrases, with a boundary after eat (so grouped into two units) (illustrated with example 5c). In example 5b the sentence gets articulated as one unit without a break (illustrated with example 5d).

(5c) [Let’s eat] [Grandma]

(5d) [Let’s eat Grandma]

In spontaneous speech it sometimes is difficult to decide whether a boundary is present (Grice & Baumann 2007: 29). Often transcribers uttered the need for different strength of phrase boundaries (Grice & Baumann 2007: 29). This difference in boundary strength resulted in different phrase types, which are strongly hierarchical ordered. This will be further set out in the paragraph on intonational models.

Now we turn to models of intonation and resulting transcription systems. Throughout time different models of intonation have been established. Because this section only a brief overview on intonation it was decided to follow a decision made by Grice, German & Warren to focus on the autosegmental-metrical model, because it is currently the most prevalent approach (2021: 286) and is widely adopted (Arvaniti & Fletcher 2021: 78). In the autosegmental-metrical model pitch is thought to be a sequence of target tones (Grice & Baumann 2007: 42), so a continuous pitch contour is decomposed to single tone targets. The tone targets have either the function of prominence cueing and are associated with

an accent and hence the stressed syllable, or they have the function of edge marking and are associated with phrase edges (Grice, German & Warren 2021: 285f). There are two aspects in the autosegmental-metrical model: the autosegmental aspect and the metrical aspect. These levels in the autosegmental-metrical model are thought to be different layers that are independent of each other and only get linked to each other (Grice & Baumann 2007: 44). The autonomy of levels means for example, one and the same tone contour can be produced on a text with varying length (Grice & Baumann 2007: 44). Which level consists of which aspects is described by Grice & Baumann:

The division of utterances into phrases and the assignment of relative prominence to elements within the phrase (phrasing and highlighting) represent the metrical aspect, [...]. The association of the tones (grouped into accents – if the language has them – and boundary tones) with the metrical structure (in other words: the association of the tune with the text) represents the autosegmental aspect. (Grice & Baumann 2007: 43f.)

For phrases there are intermediate phrases which are minor (ip) and intonation (IP) phrases which are major (Jun 2022: 152). Phrases end with a boundary tone, which is associated with the right edge of the phrase, which means boundary tones are associated with the final syllable of a phrase irrespective if it is stressed or not (Jun 2022: 152f.). There is a strong hierarchical layered structure meaning that an IP is split into ip (Jun 2022: 152f). Consequently, every IP consists at least of one ip. Accents, as mentioned previously, are associated with lexical stressed syllables (Grice & Baumann 2007: 44f.). The accented syllable is either high (H) or low (L) target tone (Grice & Baumann 2007: 44f.). Tones can form tone sequences, such as a for example a high tone followed by a low one (e.g., a low accented syllable with a high pre-accented syllable (H+L\*) or a high intermediate phrase boundary followed by a low intonation phrase boundary H-L%) (Grice & Baumann 2007: 44f.). As outlined above to an utterance more than one pitch accent can be assigned, but the last pitch accent is the nuclear accent, that is the most prominent (Grice & Baumann 2007: 28). Every ip obligatory has at least one pitch accent.

On basis of the autosegmental-metrical model a transcription system called *Tones and Breaks Indices* (ToBI) was established, that was first developed for transcribing intonation in American English but evolved to be a framework for the development of several other transcription systems for other languages (e.g., GToBI for German) (Grice & Baumann 2007: 44f.). In the ToBI system tones associated with an accent are marked with a star (e.g., H\* or L\*+H) (Jun 2022: 152). Tones associated with the right edge of an intermediate phrase are marked with - after the tone (e.g., H-) (Jun 2022: 158). Tones associated with the right edge of an intonational phrase are marked with % after the tone

(e.g., H%) (Jun 2022: 158). The different strengths of phrase boundaries are reflected in the ToBI system with boundaries from 0-4, where type three implies the end of an intonation phrase (Jun 2022: 160). Which pitch accent types and boundary tones are allowed/used combinations in intonation, is language specific. The inventory for Mainstream varieties of English<sup>1</sup> and Maltese will be described in section 1.3.2 and 1.3.3.

## 1.2 Topic

In languages with lexical stress and post lexical pitch accents (section 1.1), such as English and Maltese, wh-words typically receive a pitch accent, that is hence associated with the stressed syllable of the word (Grice, Vella & Bruggeman 2019: 1). Recent research on the Maltese language reported that Maltese has f0 peaks associated with the left edge of wh-words in interrogatives (Vella 2007, Vella 2011, Grice, Vella & Bruggeman 2019, Lialiou et al. 2021). The stressed syllable of the wh-word itself is associated with a low tone (Vella 2011: 2065). These initial H peaks, because they appear early in the word and even multiple syllables away from the stressed syllable (Lialiou et al. 2021: 164), have been usually called *early peaks* or *early H peaks*. The main question that has been put forward regarding the issue of the early H peak is whether the early H peak shows characteristics of a pitch accent (cueing prominence to the left edge of the wh-word) or whether it is not accentual (e.g., Vella 2011: 2062, Lialiou et al. 2021: 161).

The fact that wh-words often occur sentence initial made research to this topic even more difficult, because the peak could be associated to the left edge of the word or the phrase (Grice, Vella & Bruggeman 2019: 1). For this reason, a study was carried out by Grice Vella & Bruggeman addressing this issue by investigating wh-words across three phrasal positions within a direct interrogative (initial, peninitial and final) and phrase final in two types of declaratives (indirect and quoted question) (Grice, Vella & Bruggeman 2019: 4). The study found that for wh-words in interrogatives, in all phrasal positions, an early H peak was associated with the left edge of the wh-word, and thus proposed to be a word-edge tonal complex (Grice, Vella & Bruggeman 2019: 14). For declaratives in contrary a pitch fall over the stressed syllable of the wh-word was reported, analysed as a H+L\* pitch accent (Grice, Vella & Bruggeman 2019: 14). Grice, Vella & Bruggeman state:

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<sup>1</sup> The term mainstream varieties of English will be defined in section 1.3.2.

These results provide evidence that Maltese has, on the one hand, intonational events which are readily classified as regular pitch accents, due to their association with a lexically stressed syllable, and, on the other hand, intonational events that occur at a word edge. The existence of both of these tonal events in a single language, on the same, identical phonological constituent, only occurring as a function of sentence modality, makes Maltese prosody typologically rare. (2019: 14)

Grice, Vella & Bruggeman also argue that most languages only have one of these prosodic categories (2019: 14). That is, languages either have pitch accents associated with the stressed syllable of the word, or they have post lexical intonational events associated to phrasal domain edges (Grice, Vella & Bruggeman 2019: 14). They state that languages that use the latter category (e.g., Malay, Korean and Greenlandic) lack lexical stress (Grice, Vella & Bruggeman 2019: 14). Maltese so far is reported to have weight-sensitive lexical stress (e.g., Grice, Vella & Bruggeman 2019: 14). Hence, these findings do not align with current categories of prosodic typology and the authors suggest that research needs to be more flexible (Grice, Vella & Bruggeman 2019: 14).

A study by Lialiou et al. (2021) investigated the prosodic strength of syllables in Maltese wh-words with or without an early H peak. Specifically, wh-words were examined in the phrase final position of interrogatives (i.e., direct questions: wh-words bear an early H peak), declaratives (i.e., indirect questions: wh-words bear a regular pitch accent), and narrow focus declaratives (i.e., quoted questions: wh-words bear a regular pitch accent) (Lialiou et al. 2021: 161f.). As expected from past research, the early H peak always occurred on the wh-word in interrogatives (Lialiou et al. 2021: 162). The results show that the relative prominence (syllable strength) of the stressed syllable is not affected by the early H peak on the initial unstressed syllable, indicating that an early H peak is unlikely to cue prominence on the unstressed initial syllable (Lialiou et al. 2021: 164). But the study also states that there still is the possibility of a different prominence cueing function at the word level, making the wh-word overall more prominent in comparison to other words in an utterance (Lialiou et al. 2021: 164).

The possibility that early H peaks on Maltese wh-words result from a stress shift associating an accent to the unstressed syllable, is according to Lialiou et al. ruled out by five points (2021: 164). First, the occurrence of an early H peak seems to result from the sentence modality because it is reported for interrogatives in different phrasal positions (also in final position), but not for declaratives in final position (Lialiou et al. 2021: 164). Second, in the study of Lialiou there is a different number of syllables between the lexical stressed syllable and the initial one (Lialiou et al. 2021: 164). Third, the lexical stressed syllable retains its mass and hence is prosodically strong irrespective of the distance to

the early peak, while fourth the initial unstressed syllable with or without an early peak on average has lower mass than the stressed syllable (Lialiou et al. 2021: 164). Fifth the initial unstressed syllable with or without an early H peak is consequently shorter than the lexical stressed syllable (Lialiou et al. 2021: 164).

Due to the existence of early H peaks on unstressed syllables, recent research on Maltese called the perception of stress in Maltese into question. A study by Lialiou et al. (2023) investigated the phenomenon of stress deafness in Maltese English bilingual speakers. This study found that Maltese dominant speakers show a stress deafness effect, since they were significantly less able to recall sequences of pseudowords consisting of prosodic minimal pairs that differ in the stress position (e.g., NUmi vs nuMI)<sup>2</sup> (Lialiou et al. 2023: 135). Maltese English dominant or balanced speakers vary more in their performance, being not better but also not worse than the other well-known stress deaf groups (Lialiou et al. 2023: 135). The papers states: “[...] that this can be explained with reference to the prosody of Maltese and MaltE, in which lexical stress and prosodic enhancement are not straightforwardly linked” (Lialiou et al. 2023: 135). Maltese according to Lialiou et al. has weak cues to lexical stress, while pitch prominence is not exclusively reported on lexical stressed syllables to mark contrast to a lexical unstressed syllable, but also appears on initial unstressed syllables (Lialiou et al. 2023: 135). Maltese English dominant or balanced speakers may differ due to their greater contact with mainstream varieties of English.<sup>3</sup>

Most research to date addressing the issue of early H peaks is carried out on Maltese. A first investigation of prosody in Maltese English by Vella (1995), showed that in Maltese English the nuclear question tune can occur early in the question, as it is the case in Maltese (Vella 1995: 241, 246). This finding of the early nuclear question tune in Maltese was the starting point for the research on early H peaks in Maltese. As the same structure of early nuclear question tunes seems to occur in Maltese English (Vella 1995: 241, 246), intonation of Maltese English could be worthwhile to investigate further. According to Lialiou et al. it seems, that a pitch peak on an initial unstressed syllable also occurs in Maltese English (2023: 132). Maltese English hence is thought to have both types of pitch prominence (on lexical stressed syllables and on initial unstressed syllables) as it is in Maltese (Lialiou et al. 2023: 132). As research for Maltese tends to the analysis

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<sup>2</sup> In this work capitalization indicates the stressed syllable.

<sup>3</sup> The term mainstream varieties of English will be defined in section 1.3.2

of the early H peak as not being the result of a pitch accent, this indicates Maltese English might have regular pitch accents and non-accentual early H peaks.

This thesis intends to provide data and preliminary analyses that will contribute to a better understanding of pitch prominence in Maltese English. Specifically, this work tries to shed further light on the potential existence of an early H peak in Maltese English and the potential differences between regular H pitch accents and early H peaks.

Grice, Vella & Bruggeman claim that the simultaneous existence of early H peaks and regular pitch accents in language is typologically rare, suggesting a new perspective on prosodic typology (Grice, Vella & Bruggeman 2019: 14). For Maltese English this is an interesting perspective contributing to its definition as a language variety on its own. Evidence for non-accentual early H peaks could be a characteristic feature that distinguishes it from mainstream varieties of English, as mainstream varieties of English do not make use of tones associated with the left edge of a word. Previous research mainly investigated early H peaks in speech produced in laboratory settings. This thesis, departing from previous work, examines data extracted from a TEDx talk, providing thus evidence from semi-spontaneous speech. This sets up the possibility for a new perspective and future research on intonation of Maltese English in spontaneous speech and the investigation of intonation not only on wh-words, but on all types of words.

### **1.3 Background**

To be able to interpret and analyse Maltese English intonation and the data of this study it is essential to see Maltese English in a greater context. Thus, it is important to consider several levels: 1. Maltese English use alongside with Maltese language and the consequently multilingual reality in Malta 2. the development and history of Maltese language and Maltese phonology and intonation 3. Maltese English development and characteristics as a variety of English (and the influence of Maltese language on multiple levels). First, this section contains a description of the linguistic landscape in Malta historically as well as nowadays in section 1.3.1. An overview on Maltese language history, phonology and intonation is given in section 1.3.3. Section 1.3.4 outlines characteristics of Maltese English (from now on MaltE), that distinguish MaltE from Standard English (or mainstream varieties of English) on the phonological and intonational level. Section 1.3.4 also presents a definition of MaltE and discusses its status as a variety on its own. The intonational system of Mainstream varieties of English is described in the prior section 1.3.2.



Although there is a “[...] close interrelatedness of intonational and non-intonational structure in the expression of grammatical meaning [...]” (Vella 1995: 36) and therefore, Vella states a description of non-intonational features is necessary for Maltese and MaltE, to investigate their intonational relation (1995: 36), it was decided to leave out a section on grammatical sketch of Maltese and MaltE, because it would go beyond the scope of this thesis. Nonetheless, chapter 1 includes a historic linguistic perspective on language development and language landscape in Malta, but primarily focus on intonational structure of Maltese and MaltE for the aim of this work. The decision made above to only focus on the autosegmental-metrical model, also involves the description of the intonation systems of the languages treated in this work. Thus, the description of tonal inventories will be based on the ToBI transcription system.

### **1.3.1 Language Landscape in Malta**

Malta today has three official languages: Maltese, Maltese Sign Language and MaltE (Grice, German & Warren 2021: 298). Only looking at this fact the bilingual reality of Malta at least from political and administrative perspective becomes obvious. Though a vast majority of Maltese speak Maltese as a mother tongue (Caruana 2011: 1), a great majority of inhabitants are bilingual to differing degrees (Grice, German & Warren 2021: 298) and according to Krug & Sönning ca. 9% of the population of Malta use English as the/a main language at home (2018: 248). Sciriha writes that the linguistic landscape of Malta today results from two foreign rules and time periods in the history of Malta (2017: 226). In this way she states the linguistic landscape of today can be seen as “living evidence” for these two time periods (Sciriha 2017: 226). The first one is the foreign rule by the Arabs (870-1090 A.D.), the second one the foreign rule by the British Empire (1800-1964) (Sciriha 2017: 226). The historical perspective on multilingualism in Malta is outlined in the ensuing paragraph.

Malta's multilingualism has a long history and comes from its central role in Mediterranean affairs (Vella 1995: 14) and as a result the need “[...] to communicate both with merchant and trading peoples who visited the island in times of peace, and with unwelcome invaders in times of war” (Vella 1995: 14). The geographic position of Malta was thought to be of great strategic importance and lead to various foreign rules of Malta until its independence (Caruana 2011: 1). The various foreign rules inevitably had an influence on the linguistic landscape on Malta, also sociolinguistically defining the reputation of the spoken languages (Caruana 2011: 1). From 870-1090 A.D. the Arabs ruled Malta

(Caruana 2011: 1). The Arabs came from Sicily, which they had conquered earlier and moved southwards to Malta, consequently bringing their language and dialects with them (Caruana 2011: 1). Therefore, varieties of Italian most importantly the one of Sicily started to be spoken in Malta (Caruana 2011: 1). Maltese itself is suggested to have its origin in this era being based on Arabic or Siculo-Arabic (Vella 1995: 11). In the year 1090 A.D. the Normans, who had earlier taken over Sicily, conquered Malta and included it in the Kingdom of Sicily, giving Italian even a more central role in Malta (Caruana 2011: 1). Until 1800 Malta had only two languages: Italian, which was the language of the government and the church, and Maltese which was the language for daily life (Vella 1995: 15) or as Vella says, “the language of the kitchen” (Vella 1995: 15). Latin was also used, but in written modality and high prestige contexts (Caruana 2011: 1). In 1800 the British Empire incorporated Malta, established English as third language and made it desirable for Maltese to speak it (Vella 1995: 15). After a long discussion known as the language question, Italian was officially replaced with English in 1933 (Caruana 2011: 2, Azzopardi-Alexander 2017: 198). The British Empire was the last foreign occupation of Malta, which finally became independent in 1964 (Vella 1995: 11). From this historical perspective multilingualism in Malta according to Vella

can therefore be seen to be a phenomenon stretching to as far back as does the existence of Maltese as a language in its own right. It is therefore not surprising that the first major political issue that the Maltese were involved in as an emerging nation was what later became known as ‘The Language Question’. (Vella 1995: 14)

Maltese developed into a symbol of national identity (Vella 1995: 16). However, another language other than Maltese was still a necessity since the Maltese community is small and they needed to communicate internationally, also in view of the main industry of the island, which is tourism (Vella 1995: 16). English in more recent times is accepted as fulfilling a function along with Maltese but is still sometimes perceived as threat to Maltese (Vella 1995: 16).

The following section turns from the historical perspective on multilingualism to these days or more precisely to the closer past, in view of the fact that the most cited paper was written over ten years ago. The linguistic situation may have changed in the past ten years in some domains for example due to factors like the use of social media. According to Caruana, in 2011 Maltese was used widely in oral contexts for communication especially at informal levels and to a lesser extent in written contexts (2011: 3). In 2006 a representative language survey showed that in self-evaluation of their writing skill level participants claimed to have better skills in English than in Maltese (Sciriha & Vassallo

2006, as cited in Sciriha 2017: 239). Nevertheless, for modern forms of written communication which are characterised by informality and a structure resembling spoken language, like mobile phone messages or internet chats, in 2011 Brincat and Caruana find that Maltese is used (2011: 66). They call this form of Maltese “il-Malti Mghāggel (literally, ‘the hurried Maltese’)” (Brincat & Caruana 2011: 66) and name characteristics of it, for example that words are often spelled the way they are pronounced rather than the way they are spelled in Standard Maltese (Brincat & Caruana 2011: 84). This language use of Maltese may be especially interesting nowadays in times of social media and the extensive use of chat communication including not only written modality, but also voice messages. It may shape the linguistic landscape and multilingualism in Malta in these days. This point could not be considered in a paper of 2011 and could be of interest for future work. In other written contexts as mentioned above English is more commonly used, which is apparent in the fact that according to Caruana the most popular daily newspaper in 2011 *The Times of Malta* and most schoolbooks are in English (Caruana 2011: 3). Maltese is used in Law Court and Parliament (Caruana 2011: 3, Vella 1995: 18). When addressing the government people can choose between English and Maltese and receive their answers in the same language (Vella 1995: 18). In 2011 most local radio and television stations solely use Maltese (Caruana 2011: 3). The situation of language choice in families is not straightforward as Vella states (2013: 542). Different decisions could be made by parents concerning which language is spoken at home (Vella 2013: 542). In 2013, Vella says that Maltese is the dominant first language of most Maltese (2013: 542). Nonetheless, different situations exist, for example cases where the parents speak English to the children, but Maltese to each other, which is still causing children to get exposed to Maltese early (Vella 2013: 542). Or Maltese dominant households use English lexical items, which exposes the children to English early, even before the factors of education or media (Vella 2013: 542). For Vella therefore,

[...] [it] is important to stress that, regardless of what the dominant home language is, it is practically impossible for a child to grow up in a strictly monolingual environment. (Vella 2013: 542)

This language choice at home might be one of the most important factors in Maltese linguistic landscape. According to Caruana in 2011 nearly every workplace uses Maltese (2011: 3). The University of Malta, though both Maltese and English are official languages, more often uses English including lectures as well as books in classes (Caruana 2011: 3). This language choice is also influenced by more and more international students attending the University of Malta (Caruana 2011: 3). Since higher education discourse

mostly is in English, especially the daily oral use of English is associated with families having higher socio-economic class or people who studied English to a higher level (Caruana 2011: 3). Caruana states to this sociolinguistic issue:

At times Maltese nationals who speak in English are called *tal-pepè* ‘snobs’ or *qżież* ‘show-offs’. On the other hand, in certain circumstances, these speakers of Maltese-English may also be prejudiced towards those who find difficulty in expressing themselves in English or are unable to do so, as they somewhat automatically consider them to be uneducated or pertaining to a low socio-economic group. (2011: 3)

This sociolinguistic issue may influence the language choice during a conversation in different social contexts and may also result from the social reputation of the different languages throughout the history of Malta. Also, Caruana says, it needs to be mentioned that those socio-linguistic divisions have become vaguer in recent days, as more people have access to higher education (2011: 7).

Looking at interaction among Maltese, Vella writes that it is not unusual for people to be aware of the situation that they are both bilingual and have access to two codes, which sometimes may lead to code-switching (1995: 29). Bearing in mind the points outlined above one could argue this conversational situation may be seen as characterizing for Maltese multilingualism. Caruana argues to the issue of Maltese bilingualism that the linguistic landscape is much more complex than a definition as bilingual would imply “as the situation is characterized by frequent interplay between bilingualism and diglossia – especially scholastic diglossia [...]” (Caruana 2011: 3). A representative study by Sciriha in 2017 examining the frequency of languages in the public sphere primarily for public signs, notices and house names concludes that in some domains like community activities, especially religious ones, Maltese is dominant and is likely to continue to be “as a subtle pointer to the inherent needs of the Maltese to nurture ‘locality’, ‘community’ and ‘differences’ even in a global society” (Sciriha 2017: 240). On the other hand, globalisation, tourism, and trading around the world make Maltese aware of needing a second world language to be kept alive (Sciriha 2017: 240). According to Caruana the development of English in the light of globalisation may have changed the perception of English in Malta, so that it now may be less seen as a result of their colonial past, but more as a “window to the world” (2011: 7). This, according to Caruana, is possible also because the independence of Malta was (in 2011) achieved almost 50 years ago (Caruana 2011: 7) and today (2023) even almost 60 years ago.

### 1.3.2 Intonational system in Mainstream Varieties of English

This section is concerned with describing the intonational system of Mainstream varieties of English.<sup>4</sup> This is necessary to later present specific characteristics of Maltese which result from the influence of Maltese, or better stated the outcome of the interaction between Maltese and English not to imply a one-way street relation (for Maltese not only influenced the English spoken in Malta but vice versa). While for MalE also phonetic and phonological aspects will be set out to define it as a variety, this section on Mainstream varieties of English will be limited to intonational description. Phonology of Mainstream varieties of English will be described in a secondary way, when MalE's phonology differs from it. This section is only a brief overview of the intonation system of Mainstream varieties of English.

The term Mainstream English varieties (from now on MEVs) is taken from a work by Grice, German and Warren (2021) and describes standardized varieties of English spoken at British Isles, North America, Australia, New Zealand, and South Africa, that show similar phonological organization, while non-standard varieties according to Grice, German and Warren arise “[...] from second language (L2) use of English, with subsequent nativization” (2021: 291) and may differ highly from MEVs. Although this work is interested in intonation of MalE, which is considered a non-standard variety, the mainstream standard varieties of English are the basis for many currently existing English intonational transcription systems and models of intonation (Grice, German & Warren 2021: 285). Therefore, a closer look at the intonational system of MEVs is useful for the comparison and for future work on the adjustment of MEVs based models and transcription inventories. Within the MEVs there is some variance in phonological organization and intonation, but overall, they have a lot in common (Grice, German & Warren 2021: 286).

English is an intonation language (this applies for MEVs as well as for MalE) (Grice & Baumann 2007: 32). All MEVs have lexical word stress (Grice, German & Warren 2021: 287). For MEVs spoken in the northern hemisphere and for some in the southern hemisphere the unstressed syllable additional is eminent reduced leading to long durational differences with the stressed syllable (Grice, German & Warren 2021: 287). The assignment of stress in English<sup>5</sup> is little predictable (Cruttenden 1997: 15). However,

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<sup>4</sup> The term Mainstream varieties of English is taken from a work by Grice, German & Warren (2019) and defined below.

<sup>5</sup> Whenever the term English is used instead of MEVs, it is used to not change the used terminology of the indirect quoted author. In fact, he might not mean the same with the term English as MEVs. It is my

English uses lexical stress for some words to distinct lexical meaning or grammatical class (e.g., *inSULT* (verb) vs *INsult* (noun)) (Cruttenden 1995: 15). For some words there is beside the primary stress a secondary stress assigned, for example because of rhythmic reasons (Välimaa-Blum 2005: 159), but the latter will not be dealt with in detail and thus not further set out.

In MEVs the stressed syllable, usually the primary stressed one, is the potential place for pitch accents (Grice, German & Warren 2021: 287). For some occasions, for example due to rhythmic reasons when stressed syllables of two words clash, there can be a stress shift resulting in a usually unstressed or secondary stressed syllable bearing an accent (Grice, German & Warren 2021: 287, Välimaa-Blum 2005: 204 f.). In MEVs every intonation or intermediate phrase obligatory has at least one pitch accent (Grice, German & Warren 2021: 287). This obligatory pitch accent is the nuclear accent, which is if there is more than one accent, the last one in the intonation phrase and perceived as the most prominent (Grice & Baumann 2007: 28). Apart from that pitch accents are rarely distributed in MEVs (Grice, German & Warren 2021: 287). Prenuclear pitch accents are not necessary and for example, added for information structure or in favour of rhythmic reasons near the beginning of a phrase (Grice, German & Warren 2021: 287). In MEVs pitch accents are more common on content words than on function words and within content words more common on nouns than on verbs (Grice, German & Warren 2021: 287).

We now turn to the tonal inventory of MEVs. In what follows the ToBI inventory developed for Mainstream American English is presented. This inventory seems to be somehow representative for MEVs, though there have been presented different analysis of for example, Southern Standard British English (Grice, German & Warren 2021: 287f.). Grice, German & Warren state:

However, there are a number of differences in the tonal inventories of AM models developed for SSBE [Southern Standard British English], although they appear to reflect differences in the models themselves rather than differences in intonation (MAE and SSBE). (2021: 288)

What needs to be kept in mind is that authors writing about intonation of MaltE, which arose from contact of Maltese and British English, might apply a different analysis of the tonal inventory as the one for Mainstream American English. Addressing this issue Ladd wrote: “[...] to do typology, you have to have a set of agreed descriptions cast in comparable terms” (2008: 373). If this set of agreed descriptions is not given, this can lead to

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transmission and interpretation that the term English can be understood as MEVs. For a clear terminology use, I want to keep this transparent.

comparison of transcription systems of languages rather than comparison of intonation of languages (Ladd 2008: 372ff.). Grice, German & Warren also cite Ladd regarding this issue (2021: 288).

For Mainstream American English pitch accent inventory is: L\*, H\*, L+H\*, L\*+H and H+!H\* (Grice, German & Warren 2021: 287). All accent exist with the possibility of a downstep (transcribed with an exclamation mark before the tone e.g., !H\*) (Grice, German & Warren 2021: 287). There are two types of phrases, the intonational phrase and the intermediate phrase (Grice, German & Warren 2021: 287). Boundary tones in MEVs associated with the right edge of the intermediate phrase are H-, L- or !H-, which are followed intonation phrase finally by H% or L% (Grice, German & Warren 2021: 287).

### 1.3.3 Maltese

This section provides information about Maltese language. It includes a part on history and language development, phonology, and intonation of the Maltese.

We start by presenting a brief outline on the origin and development of Maltese. Maltese is assumed to have its origin in the time of Arabic rule 870-1090 A.D. (Caruana 2011: 1; Vella 1995: 11). Before conquering Malta, the Arabs had conquered Sicily (Caruana 2011: 1). The basis of Maltese is considered to be based on Siculo-Arabic (Vella 1995: 11). Over the years Malta was occupied by varying foreign rulers, consequently bringing new languages into Malta (Vella 2013: 535). Maltese language (or rather Maltese speakers) showed high capacity of adaptability including structural and above all lexical items into the language (Vella 2013: 535). Vella cites a suggestion by Cassola, translated to English by her, describing the development of Maltese:

...Siculo-Arabic...was gradually transformed into...the linguistic phenomenon that is Maltese, a language whose morphology is almost entirely Semitic, and whose syntax and lexis are Romance. (Cassola 1985: 2, as translated and cited in Vella 1995: 11)<sup>6</sup>

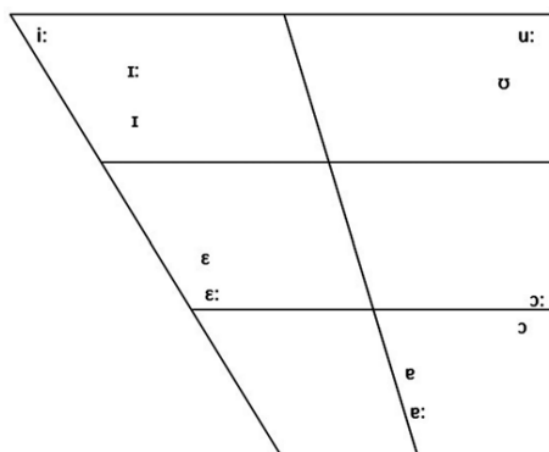
When addressing Maltese, it needs to be mentioned that Maltese is a language with many dialects (Vella 2013: 536). Vella states that compared to the relatively small number of speakers and the relatively small size of the territory of Malta, the dialectical situation is extremely rich (Vella 2013: 536). Talking about Maltese, this work will limit to Standard Maltese, which is a decision also made by Vella in 1995, because it is the most investigated (Vella 1995: 51). The following paragraphs on phonology and intonation will further define what characterises Standard Maltese for these aspects and hence, define what

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<sup>6</sup> Ellipses were made by the cited author Vella and are not changed here.

is the basis for this work. A characterization of Maltese dialects would go beyond the scope of this thesis.

The next part of this section focuses on phonology of Maltese. Figure 1 shows the vowel inventory of Maltese in relation to the cardinal vowel chart (taken from Alexander-Azzopardi (2003) as cited in Alexander-Azzopardi (2017: 202)). As can be taken from figure 1, Maltese distinguishes vowels on basis of vowel quality and vowel quantity. Long vowels are [i:], [ɛ:], [ɐ:], [ɔ:] and [u:]. Short vowels are [i], [ɪ], [ɛ], [ʊ], [ɔ] and [ɐ]. For diphthongs Alexander-Azzopardi writes that “[...] Maltese makes use of diphthong-like combinations of /j/ or /w/ preceding or following the monophthongal vowels [...]” (Alexander-Azzopardi 2017: 204). This analysis of diphthongs is made even if /j/ and /w/ have the status of consonants (Azzopardi-Alexander 2003, as cited in Alexander-Azzopardi 2017: 200).



**Figure 1:** Vowel inventory of Standard Maltese in relation to the cardinal vowel chart (from Alexander-Azzopardi 2003, as cited in Alexander-Azzopardi 2017: 202).

We now turn to consonants. Figure 2 shows the consonantal inventory of Maltese (taken from Vella 1995: 55). Obstruents in Maltese are devoiced in word final position (Vella 1995: 55). Maltese consonants can be geminated in all word positions (except initially) and this durational difference can be distinctive (Vella 1995: 55f.). An example given by Vella of the distinctiveness of gemination is *safar* ‘travelling’ [ˈsəfər] vs. *saffar* ‘he whistled’ [ˈsəf:ər] (1995: 56).



	Bilabial	Labio-dental	Alveolar	Post-alveolar	Palatal	Velar	Glottal
Plosive	p b		t d			k g	ʔ
Nasal	m		n				
Fricative		f v	s z	ʃ			h
Affricate			ts	tʃ dʒ			
Retroflex			r				
Lateral approximant			l				
Approximant	w				j		

**Figure 2:** Table presenting consonant inventory of Standard Maltese (from Vella 1995: 55).

We now describe intonation of Maltese, which is as English an intonation language. The first point we address is lexical stress in Maltese. Maltese has lexical stress (Vella 1995: 56ff.). Stress is assigned to the last heavy syllable in the word (Grice, Vella & Bruggeman 2019: 2). This is the case: “[...] except in words having a closed final syllable, which can only be stressed if it is superheavy (V:C or VCC)” (Grice, Vella & Bruggeman 2019: 2). Heavy syllables are syllables consisting of a long vowel or a diphthong (both can be followed by a consonant) (Vella 1995: 64a) or a short vowel followed by a consonant (Grice, Vella & Bruggeman 2019: 2). On basis of the phonological rules stress is assigned to the antepenultimate syllable, the penultimate or the final syllable (Grice, Vella & Bruggeman 2019: 2). If a word has no heavy syllable, the stress is assigned to the penultimate syllable (Vella 2009, as cited in Grice, Vella & Bruggeman 2019: 2). Maltese shows the tendency not to weaken/reduce vowels in unstressed syllables (Vella 1995: 54). This may affect the rhythm of the language (Vella 1995: 54).

Maltese is analysed as having regular pitch accents associated with the lexical stressed syllable of the focused element (Grice, Vella & Bruggeman 2019: 2). The pitch accent inventory consists of L\*, H\*+L, H\* and L+H\*, as analysed by Vella (1995: 249). Boundary tones are associated with the right edge of a phrase (either a phonological phrase (p) or an intonational phrase (I)) (Vella 1995: 249). Boundary tones as analysed by Vella are L<sub>p</sub>, H<sub>p</sub>, L<sub>I</sub> and H<sub>I</sub> (Vella 1995: 249). This distinction between phonological and intonational phrase is important because it based on a major observation. In Maltese the nuclear question tune and the nuclear statement tune sometimes occur early in the

question/statement (Vella 1995: 164f.). Because the nuclear stretch of speech occurs early in the intonational phrase, it is followed by post-nuclear tunes (Vella 1995). Those post-nuclear tunes occur within the same intonational phrase, but extrametrical to the phonological phrase, which contains the focused element (Vella 1995: 110ff.). Therefore, Vella states:

In cases of the nuclear question tune in a P-phrase [phonological phrase] occurring early in the I-phrase [intonational phrase], in other words when constituent order changes result in a [+focus] stretch of speech early in the sentence, the tune can be represented as L\* Hp. In other words, although there is no I-phrase boundary at the rightmost edge of the focussed material [...], a P-phrase boundary is present at the boundary in all cases. These observations provide evidence for the suggestion [...] that the domain of focus in Maltese is the P-phrase. (Vella 1995: 168)

This observation was the first starting point to investigating tone contours in Maltese and a first indication of the phenomenon later called *early H peak* in Maltese (Vella 2007, Vella 2011, Grice, Vella & Bruggeman 2019 and Lialiou et al. 2021). The early H peak is explained in section 1.2 on the topic of this thesis.

#### **1.3.4 Maltese English**

Varieties are fundamentally defined through distinguishing characteristics from a considered Standard on many linguistic levels. This is one reason why for MalTE also phonetic and phonological beside intonational characteristics will be treated in this thesis. This section outlines characteristics of MalTE that distinguish it from MEVs described in section 1.3.2. To describe MalTE as a variety, it is at first necessary to discuss MalTE's status as a variety on its own. To define MalTE as a variety is necessary to enlighten with which definition we are working in this thesis. In this regard it is also worthwhile to look at underlying sociolinguistic aspects of such a definition as a variety on its own. Overall, Vella states: "There is nothing controversial about a statement to the effect that ME [here Maltese English] is influenced by Maltese" (1995: 66). Most research so far focused on phonetical and phonological features and some on grammar. Intonation was examined to a lesser degree mostly in more recent years of research (e.g., Vella 1995, Grech & Vella 2018).

First, we start with outlining the sociolinguistic backgrounds of defining as a variety on its own. The definition as a variety on its own changes the perception of the variety by its speakers (Vella 2013: 547), indicating that the

[d]iscussion of the issue of whether or not Maltese English can be considered a variety in its own right is bound to be a hot one because such a discussion feeds off speakers' perception of the variety which many of them speak. (Vella 2013: 547)

Hence, the underlying sociolinguistic aspects of such a definition as a variety and the consequences for speakers cannot be disregarded. As described earlier in section 1.3.1 Maltese speaking English are often associated with higher educated people or specifically higher socio-economic group, leading to social tension. But this distinction not only exists for Maltese vs. English, but also for English that is marked by Maltese to differing degrees, because people from lower socio-economic groups often speak a more Maltese influenced English (Caruana 2011: 7). Azzopardi-Alexander states, that usually people with an English closer to Standard English will be considered educated (2017: 215). Speakers whose English is influenced by Maltese at grammatical level or that have problems on the vocabulary level are considered as not speaking educated MaltE (Azzopardi-Alexander 2017: 215). Speakers whose English is only influenced phonetically or phonologically however, are not judged the same way as speakers with grammatically or lexical marked English (Azzopardi-Alexander 2017: 215). The judgements made by people, as Azzopardi-Alexander adds, are for sure also relative to where the judging person is located on the continuum (2017: 215). Reference to the English spoken in Malta as MaltE and therefore looking at the continuum sometimes for this reason is understood as a judgment of lack of competence, because the goal would be Standard English (Azzopardi-Alexander 2017: 215ff.). Grech and Vella conceive that the dismissive attitude towards MaltE has hindered research on MaltE variation (2018: 204). Azzopardi-Alexander concludes on this sociolinguistic issue:

We no longer need to hide behind any other standard. Maltese English has developed into what can be seen as middle-ground phonology firmly grounded in the native Maltese system. There is a strong relationship between Maltese English and GB [General British]. Speakers move towards the GB phonological system to different extents [...]. [...] To an extent one could describe this as an inter-language but it does not usually change over time unless the speaker is away from the island for substantial periods of time. (Azzopardi-Alexander 2017: 215)

Though one can argue that this statement is to some extent politically loaded and maybe to a degree expresses the opinion of the author, it shows the change of the perception, when a variety is defined as on its own and defined as not just failing standards. The question if MaltE is a variety on its own, is hence to a certain degree also a political and sociolinguistic discussion affecting the speakers of MaltE. The question if MaltE is a variety on its own was ground for discussion, that as Vella states, needed a definition on basis of specific characteristics of MaltE (2013: 547). This thesis will focus on the linguistic perspective of a definition as a variety, outlining the characteristics that underpin such a definition as a variety.

MaltE is a variety of English that, as outlined above in section 1.3.1, arose from the language contact of Maltese and English due to foreign rule of Malta by the British Empire in the 19<sup>th</sup> and 20<sup>th</sup> century. MaltE is considered a non-standard variety of English, which are defined as resulting from second language use of English and ensuing nativization (Grice, German & Warren 2021: 291) (ref. section 1.3.2). Azzopardi-Alexander brings up that for a definition as a variety the number of speakers and the quality of their English is important (2017: 198). The latter matches somewhat to the point of nativization mentioned in the definition by Grice, German & Warren (2021: 291) as native speakers are thought to have the highest intuitive language skills in a language.

Though in this and other works the term MaltE is used to describe the contact variety of Maltese and English, it should not be taken mistakenly and imply, that MaltE is homogenous, but is a variety with variation in itself (Grech & Vella 2018: 205). Speakers are located on a continuum where their English may be influenced by Maltese to differing degrees, making them more or less identifiable as a speaker of MaltE (Grech & Vella 2018: 206). Therefore, when it is talked about MaltE in this work, it is a generalisation, especially when analysing only a single speaker. Additionally, there is the possibility to distinguish between MaltE and Mixed Maltese English, the latter often being defined by presence or absence of Maltese lexical items in an utterance (Vella 1995: 31). For the continuum described above Mixed Maltese English would be at one end of the continuum (Vella 2013: 544). Vella states that both Mixed Maltese English, where English is only part of an utterance beside Maltese, and MaltE, where English is somehow on different levels influenced by Maltese but other than that it is solely English, show phonetic and phonological characteristics of MaltE, that can be identified (Vella 1995: 31ff.). Vella on this basis formulates a working definition of MaltE:

Maltese English is that English which is influenced by Maltese mainly at the levels of phonetics and phonology and minimally at the levels of syntax, morphology and lexis. (Vella 1995: 33)

I will use this working definition this thesis to define MaltE but with the specific addition of the influence by Maltese intonation on MaltE. Proceeding from this definition we can describe the characteristics of MaltE. As stated in the introduction of the background section there will be no section on grammar of MaltE. We focus on phonetics/phonology and intonation of MaltE, that is influenced by Maltese.

We begin by looking at phonological characteristics that distinguish MaltE from MEVs. Phonetic/phonological features are most likely to be present to some degree and therefore are valuable to distinguish MaltE from other variety, but also to identify

variation within the variety and individual speakers (Grech & Vella 2018: 207). We start by looking at vowels. There are some vowels in English that are not part of the vowel inventory of Maltese (Vella 1995: 69). Those vowels are the near-open front unrounded vowel [æ], the open-mid central unrounded vowel [ɜ:] and the mid central vowel (schwa) [ə] (Vella 1995: 69). A study with nine speakers by Azzopardi-Alexander showed, that some speakers use Maltese vowels in English without any adaption (2017: 213). Some speakers substituted the English vowels not existing in Maltese by Maltese open-mid front unrounded vowel [ɛ] (Azzopardi-Alexander 2017: 214). MaltE is reported to tend to full over reduced vowels (Grech & Vella 2018: 203, Vella 1995: 74). So, vowels in unstressed syllables are not reduced (Vella 1995: 74). Examples given by Vella are the words *bottom* [bɒtəm] realised in MaltE as [bɒtɪm] and *boundary* [baʊndəri] in MaltE realised as [baʊnderɪ]. For diphthongs the study of Azzopardi-Alexander found that diphthongs are commonly broke up into two syllables (2017: 205ff.), so the diphthong /ɪə/ is commonly realised as [ɪjə] and [ʊə] as [ʊwə] (2017: 214). This observation fits to the analysis of Maltese's diphthongs (section 1.3.3), because according to Azzopardi-Alexander Maltese uses diphthong-like combinations, consisting of a vowel and an approximant (either [j] or [w]) (2017: 204).

Now we address consonants that differ from those in MEVs. The dental fricatives are not part of the phoneme inventory of Maltese ([ð] and [θ]) (Vella 1995: 75). In MaltE this often leads to their substitution through the alveolar plosives [d] and [t] (Vella 1995: 75; Azzopardi-Alexander 2017: 214). Another characteristic of MaltE is that the velar nasal [ŋ] is produced as [ŋg] rather than just [ŋ], resulting in pronunciations such as [sɪŋgɪŋg] in MaltE rather than [sɪŋɪŋ] like in MEVs (Vella 1995: 75). In the study of Alexander-Azzopardi for all nine MaltE speakers the alveolar lateral-approximant was always produced clear [l], not like in MEVs for some cases slightly velarized as a 'dark l' [ɫ] (2017: 214). Ergo, MaltE shows an absence of 'dark l' (Grech & Vella 2018: 206). MaltE speaker use a rhotic accent (Azzopardi-Alexander 2017: 213), using a post-vocalic [r] that shows a strong degree of palatalisation (Vella 1995: 76). It is also reported that MaltE speakers tend to geminate consonants (Grech & Vella 2018: 206). Obstruents in word final position are often devoiced (Azzopardi-Alexander 2017: 214) and plosives tend to be aspirated in all positions in the word (Vella 1995: 77).

Let us now look at intonational characteristics of MaltE, opening with description of rhythm. Vella in her work from 1995 cites a work from Calleja that mentions Maltese speakers, while speaking English, tend to break utterances into more tone groups, pausing

usually at every grammatical boundary and hence more frequently than Standard English speakers (Calleja 1987: 112, as cited in Vella 1995: 233). Grech & Vella propose that rhythm might be a key element in the characterisation of MaltE (2018: 204). Grech & Vella mention that the use full vowels (lack of schwa) in combination with geminated consonants and rhotic [r] results in a rhythmic pattern that is different from MEVs (2018: 203). The carried-out study by Grech & Vella showed, that MaltE speakers with an English considered more identifiable influenced by Maltese had less variability in the duration of successive vowels as speakers who were ranked lesser identifiable (Grech & Vella 2018: 219). Speakers who were ranked to be most identifiable speakers of MaltE had least variability in vowel length (Grech & Vella 2018: 220). They state:

The combined effect of more or less variability in the duration of successive vowel segments over longer stretches of speech may in turn lead to a perception of different rhythm patterns. (Grech & Vella 2018: 219)

The next aspect of intonation we want to approach is lexical stress in MaltE. MaltE is reported to have lexical stress. Lexical stress, and its placement, is heavily influenced by stress in Maltese (Vella 1995: 79). In general, MaltE puts weight over other factors when assigning stress (Lialiou et al. 2023: 132). The tendency to full over reduced vowels in unstressed syllables, results in relatively weak cues to stress (Lialiou et al. 2023: 132). In Maltese stress is placed on the final or penultimate syllable (Vella 1995: 79). On loan words in Maltese sometimes stress occurs on the antepenultimate syllable (Vella 1995: 79). This stress placement of Maltese reflects in MaltE differentiating it from MEVs that place the stress antepenultimate or earlier (Vella 1995: 79). There is a tendency for shifting initial word stress to a syllable later in the word and to shift initial primary stress of a word to a secondary stress which is final or penultimate (Vella 1995: 79). In words with antepenultimate stress in MEVs the stress in MaltE is shifted to the penultimate syllable (Vella 1995: 79). According to Vella, words like *BAPTism* or *CENtimeter* (as stressed in MEVs), in MaltE underlie a stress shift and are most likely to be produced as *bapTISM* and *centiMEter*.<sup>7</sup> Other words like *MESsenger*, *circUMference* or *satisFACTory*, according to Vella, are not reported to underlie a stress shift (1995: 80). For words with antepenultimate stress in MEVs the stress always shifts to the penultimate syllable in MaltE (Vella 1995: 80). Vella writes, that such a stress shift to the penultimate syllable may only be possible if this syllable has an unreduced vowel and is thus stressable (Vella 1995: 81). For a word like *MESsenger* this is not the case, and hence the stress might not

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<sup>7</sup> In this work capitalization indicates the stressed syllable.

shift for this reason (Vella 1995: 81). For compounds where the second element is polysyllabic the stress falls on the second element and not like in MEVs on the first element (Vella 1995: 84). For compounds with monosyllabic second element the stress placement is the same as in MEVs (Vella 1995: 84). Vella writes: “[...] ME [Maltese English] treats SE [Standard English] compounds as if they were lexical items, stress being assigned accordingly as in ME lexical items” (1995: 84).

The next part reviews past research on tone contours in MaltE. As already mentioned in this work, and also mentioned by Vella in her work on intonation of MaltE, work on prosodic aspects of MaltE is limited (1995: 233). Vella states, that there is evidence for intonation, and specifically also tone contours, in MaltE are influenced by Maltese (1995: 247). In her work Vella gives an example that she states to represent the prosodic difference from MaltE to MEVs clearly (1995: 234). Figure 3 shows the example chosen by Vella.



**Figure 3:** Example for Maltese English intonation (taken from Vella 1995: 234).

MaltE has regular pitch accents, associated with the stressed syllable of the word, and boundary tones, associated with the right edge of a phrase (Grice, German & Warren 2021: 299). In her work Vella examines yes-no question and tone contours as a starting point to MaltE tone contours (Vella 1995: 235ff.). She concludes that: “The suggestion of influence from Maltese is impossible to avoid if one looks at the descriptive facts about the intonational phonology of Maltese” (Vella 1995: 246). In her analysis she found cases where the nuclear rise of the question occurred early in the question, rather than at the end of the intonation Phrase (Vella 1995: 241). The same pattern is found in Maltese (section 1.3.3). She presents an exemplary question illustrating such a case (Vella 1995: 241). The exemplary question is: *You know what I mean?* (Vella 1995: 241). She describes the tone contour as follows: “In this case there is a rise in F0 from a L tone on the stressed syllable of know to the end of know. This is followed by a slight fall in pitch on I rising again on mean” (Vella 1995: 241). She detects the influence of Maltese, because in Maltese the nuclear question tune always occurs at the end of the phonological phrase (L\* H<sub>p</sub>) (Vella 1995: 246). If the phonological phrase occurs early in the intonation phrase

and therefore, the nuclear tone contour occurs early, it is followed by L+H\* pitch accent on the stressed syllable of the post nuclear stretch of speech (Vella 1995: 246f.). She closes with the statement:

[...] post-nuclear tunes in ME [Maltese English], like in Maltese, occur within the same I-phrase [intonational phrase] as, but extrametrical to, the P-phrase [phonological phrase] containing the nuclear tune. (Vella 1995: 247)

This finding of early nuclear contours and association with tones to the phonological phrase, is the first allusion of early H peaks in MaltE.

#### **1.4 The current study**

The aim of this study is to shed further light on pitch prominence in Maltese English. It is a preliminary attempt to early H peaks in Maltese English and tries to provide data and preliminary analyses to suggest the existence of a non-accentual early H peak in Maltese English. This study is part of a research project on Maltese English intonation and accompanying speech gestures.

Previous research on early H peaks mainly focused on Maltese's question tune and specifically wh-words in Maltese. Most research investigated speech produced in laboratory settings. This work, departing from others, looks at a corpus, extracted from a TEDx talk and hence, is a study on semi-spontaneous speech. This also implies, that the research is not limited to the question tune or wh-words in MaltE. Since research has not yet exactly defined what early H peaks are and even to a lesser degree investigated early H peaks in MaltE and in semi-spontaneous speech, we try to provide, as far as possible, a neutral preliminary annotation process to generate data for this study. We capture every high pitch prominence that occurs:

1. on an initially unstressed syllable of a polysyllabic word
2. on a stressed syllable of a polysyllabic word
3. on a monosyllabic content word
4. on a monosyllabic function word

Why we chose this approach is explained below in chapter 2 on methods.

## **2. Methods**

This chapter describes the data and methodology of the study of this thesis, starting with the corpus and its selection in section 2.1. The next section 2.2 treats the annotation process, which includes segmentation and prosodic transcription. In section 2.3 the evaluation and analysis of the collected data will be described.



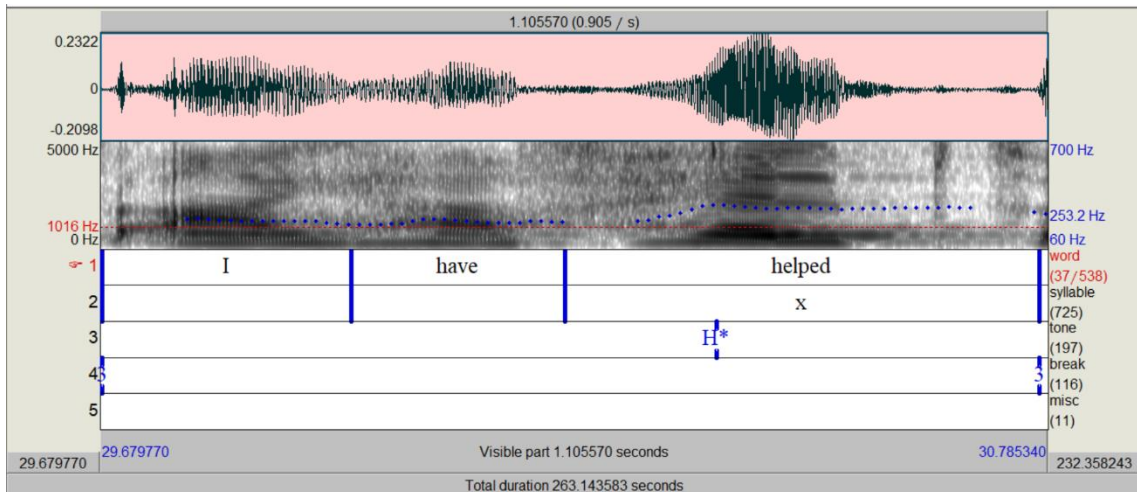
## 2.1 Corpus

This study analyses a TEDx talk by Sarah Young with a length of 14 minutes and 42 seconds. A TEDx talk was chosen because it is publicly available and offers speech that is not recorded for the purpose of research. A later aim of the project that this work is part of is to investigate speech-accompanying gestures, which makes a video for later investigation of speech-accompanying gestures obligatory. This later aim is not treated in this current work that only analyses audio data and deals with intonational features. The TEDx talk was downloaded from YouTube and converted from mp4 to wav.

The specific speaker Sarah Young was chosen, because a native speaker of Maltese and MaltE considered her to be prototypical of this variety. Grech and Vella found that speakers of MaltE can identify and rate each other to which degree their English is influenced by Maltese, indicating systematic features that characterise the variety (2018: 203, 220). But note that the characteristics of MaltE are diverse and speakers show characteristics to a different amount, as described in section 1.3.4. Also, the situation of semi-spontaneous speech in a TEDx talk and sociolinguistic factors like the reputation of MaltE in current society, but also in a historical perspective, may have an influence on the speech style a person chooses in such a public situation like an official talk (ref. section 1.3.1). The style therefore may be different from one in a more private situation.

## 2.2 Annotations

This section focuses on the annotation process, consisting of segmentation and prosodic transcription. All annotations were made independently by two trained transcribers based on auditory and visual impressions in Praat. There was a 90% intertranscriber agreement. Cases that were transcribed differently by the two transcribers were then discussed in group to derive a final transcription. Each of the text grids (three because of the length of the TEDx talk) contains five time-aligned tiers. The first tier is an interval tier with a graphemic transcription of the spoken data (word tier). The second tier is the syllable tier which is also an interval tier. In the third tier which is a point tier pitch prominence was annotated. For this study, we annotated solely high peaks. The fourth tier is a point tier where boundaries between words and phrases get annotated. The last tier is the miscellaneous for comments and recording additional observations. In this tier hesitations and slips of tongue were observed as well. Those hesitations were not further considered for any other examination. Figure 4 shows the transcription tiers in Praat.



**Figure 4:** Transcription tiers in Praat.

### 2.2.1 Segmentation

In this section, we focus on the segmentation process. The segmentation includes the word and syllable tiers. In the word tier, words are orthographically transcribed. YouTube’s subtitling function was used to generate a script of the spoken data (following the protocol developed by Vella et al. 2023). The two transcribers checked the automatic transcription from YouTube and made corrections if needed. The segmentation of words was automatically generated by the Munich Automatic Segmentation System (MAUS). For this process, we needed to divide the TEDx into three parts, because the original file was too large for Praat. For each of the three parts, we created an individual Praat text grid. Later the two transcribers corrected segmentation manually in Praat because there are cases where the algorithm is not accurate enough. In addition, we added 50ms silence for words starting with a vowel before the vowel onset because of glottalization and 100ms silence for the closure phase of voiceless plosives, if the segmentation was not determined by its surroundings.

Syllables were manually segmented. For segmentation, we applied the maximal onset principle. The maximal onset principle assumes “[...] that the maximum number of consonants allowed by phonotactics of the language will occur in syllable-initial position [...]” (Fallows 1981: 310). Simultaneously we assume and apply the principle of ambisyllabicity. Ambisyllabicity is a phenomenon that only affects internuclear consonants. An internuclear consonant is ambisyllabic if it is shared by two neighboured syllables (Fallows 1981: 310f.). For some syllabification theories, ambisyllabic segments are considered impossible, if the maximal onset principle is presumed, because the

[...] [maximal] onset prescribes placing the syllable boundary before the maximum possible initial cluster. This principle, *sensu stricto*, assigns a consonant in initial position in one syllable, and eliminates the possibility of ambisyllabicity, or overlap. It implies a priority of syllable-initial position. (Fallows 1981: 311)

In other words, if the maximal onset principle is taken as a priority ambisyllabicity is ruled out. If you assume ambisyllabicity the assumption is made that a syllable attracts maximal onset and maximal coda. For some theories, the assumption of the equal importance of maximum onset and maximum coda is only assumed for stressed syllables and therefore maximal onset principle is only violated for unstressed syllables like it is the case for Bailey (1978, as cited in Fallows 1981: 311). Other theories assume maximum onset and maximum coda for lexical stressed and unstressed syllables and serve for this issue the solution of ambisyllabicity, saying that one segment is shared by both neighbouring syllables (Fallows 1981: 310f.). In cases of ambisyllabic segments, we placed the syllable boundary in the middle of the ambisyllabic consonant.

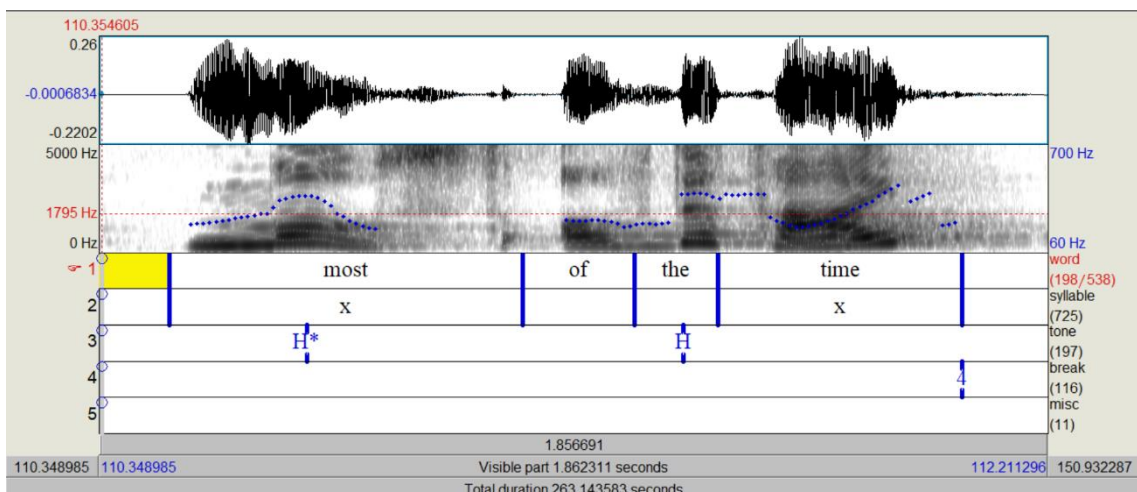
Further lexical stress was taken from a Standard English dictionary. Lexical stressed syllables of polysyllabic words were marked with an x in the syllable tier and capitalized in the word tier. In this work capitalization of a syllable indicates the lexical stressed syllable in examples. Monosyllabic words were not specially marked in the word tier. Monosyllabic content words receive an x in the syllable tier, like stressed syllables of polysyllabic words. The distinction between syllables with an x and syllables without an x, will be important for the prosodic transcription. What is considered as a content word is outlined in the following paragraph.

In traditional grammar theory words belong to one of two grammatical word classes (Radford 2009: 2, Rijkhoff 2007: 710). Either they are content words or function words (Radford 2009: 2). Content words (sometimes called lexical words) are words that have a lexical meaning or put differently words with a denotation (Radford 2009: 2, Miller 2008: 41f.). Content words as an additional characteristic often have an antonym (Radford 2009: 2). Function words or grammatical words, however mark grammatical properties and do not have a denotation (Radford 2009: 2, Miller 2008: 42). Lexical word classes belonging in the grammatical word class of function words are closed lexical word classes, which means they have few members, and it is unlikely to add words (Rijkhoff 2007: 710). In contrast, content words are open lexical word classes, where the number of words belonging to the lexical word class is not fixed (Rijkhoff 2007: 710). Which lexical word classes belong to which grammatical word class is flexible rather than fixed and often lexical word classes are assigned to content words by one author and to function words

by another. Some are considered to be on the borderline between both grammatical word classes. Lexical word classes that are undisputed in the class of content words are nouns, verbs, adjectives, and adverbs (Miller 2008: 42). Those lexical word classes all denote something like entities, actions, states (Miller 2008: 42). Function words are determiners, quantifiers, pronouns, personal pronouns, auxiliary verbs, and conjunctions (Radford 2009: 4ff.). For those lexical word classes, it is mostly undisputed that they do belong to the grammatical word class of function words. We will use this assignment of lexical word classes to the grammatical word class for the current study. For other word classes it is more complicated for example for prepositions. Radford lists prepositions clearly as content words (Radford 2009: 4), while Miller mentions that they are often treated to be on the borderline (Miller 2008: 42). For prepositions like *of* there is no meaning that can be established, but Miller also mentions that “[...] recent analyses of prepositions have shown that many have major meanings and can only be described as words with denotations” (Miller 2008: 42). He claims those prepositions with major meanings need to be treated as content words, but also states that in the class of content words they are not as central as nouns (Miller 2009: 42). For the aim of this study all prepositions will be treated as function words. The reason for this is of intonational and grammatical nature. First, prepositions in MEVs commonly do not receive an accent on suprasegmental level, because they are semantically light and semantically light words are less favoured to receive an accent (Grice & Baumann 2007: 36). Likewise, this is the case for function words, as in MEVs accents are more common on content words, having a denotation (Grice, German & Warren 2021: 287). A pitch prominence on a preposition therefore is noteworthy, taking into consideration that a pitch prominence is usually thought to signal prominence for information structure (pitch accent). Moreover prepositions belong to the closed word classes, that have few members and it is unlikely to add members (Rijkhoff 2007: 710).

The distinction between grammatical word classes is especially important for monosyllabic words. Monosyllabic words consist only of one syllable. Hence, this syllable is the lexically stressed syllable. Every lexically stressed syllable is a potential place for a pitch accent and could be accented without violating intonational rules on suprasegmental level. But words are more or less favoured of being accented based to which classes they belong. Content words and in this class especially nouns are favoured to receive an accent. Function words however are less favoured to receive an accent being semantically light (ref. section 1.1.). According to Cruttenden determiners, auxiliary verbs, personal pronouns, shorter prepositions, and conjunctions most often occur in an unstressed form with

a reduced vowel (e.g., *the* [ðə] and *a* [ə]) (1997: 17), making it hard to accent them. In the case of accentuation, the reduced vowel needs to be realised with a full vowel in a stressed version ([ðə] → [ði:] and [ə] → [eɪ]) (Cruttenden 1997: 17). Of course, accent placement still depends on information status and focus condition. It is not impossible for a preposition to receive a pitch accent, if it is in contrastive focus (ref. section 1.1). But in broad focus the last element with lexical weight of the phrase most likely receives the nuclear pitch accent (ref. section 1.1). Therefore, a high pitch prominence on monosyllabic function words is most likely to be an early H peak and it is unlikely that a pitch peak is the manifestation of an accent in more than a handful of cases in our dataset. For most cases this means a high peak on a monosyllabic function word like a preposition or determiner is unusual from the aspect of information structure and is considered a non-accentual early H peak, while high peaks on monosyllabic content words like nouns are at first all considered an H\* peak (regular pitch accent). Figure 5 illustrates the classification as early H peak or H\* peak for monosyllabic words.



**Figure 5:** Example of monosyllabic words and their pitch prominence transcription.

### 2.2.2 Prosodic transcription

The prosodic transcription consists of breaks and tones. Breaks were transcribed after the Tones and Breaks Indices conventions (ToBI) that includes numbers from 0 to 4 based on the strength of a boundary (Jun 2022: 160). For clarity and the aim of this study it was decided to only transcribe type 3 and 4 boundaries. Like in the ToBI conventions boundary type 3 is used to mark the end of an intermediate phrase and type 4 for the end of an intonational phrase. Complex tone contours like rise-fall-rise were considered a type 4 boundary, even if they consisted only of one word. Now we focus on the transcriptions of

tones. In this work we are solely looking at high pitch prominence. Within pitch prominence we distinguish between two types:

1. High peaks that occur on the lexical stressed syllable of a polysyllabic word or on a monosyllabic content word → H\* peaks
2. High peaks that occur on an initial unstressed syllable of a polysyllabic word or on a monosyllabic function word → early H peaks

High peaks occurring after the stressed syllable were initially transcribed and later deleted for data analysis. High peaks on stressed syllables or monosyllabic content words are labelled as H\*. High peaks occurring on initial unstressed syllables of a polysyllabic words or monosyllabic function words are labelled as H. The H\* and H follow the ToBI system but notice that this is not a ToBI analysis, and it does not imply the categorization that is usually entailed with these symbols. Pitch prominence labelled as H\* may be regular pitch accents marking information structure, like the symbol indicates in the ToBI conventions, but this is not necessarily the case for all of them. For polysyllabic words there is the possibility, that the initial syllable of the word is the lexical stressed syllable, like in REcord or COUples. This sets up ambiguity because a pitch prominence on the initial stressed syllable may be a regular pitch accent or a non-accentual early H peak. Research to date has not yet defined exactly where early H peaks occur and which function they fulfil. Because of this we make a restriction. It is not necessarily that an early H peak cannot be placed on an initial lexical stressed syllable. The same restriction is valid for monosyllabic content words because an early H peak may occur on monosyllabic content words. So not all high pitch peaks labelled as H\* are obligatory pitch accents with the function of informational structuring. This potential overlap blurs the picture. This is the reason why we decided to annotate the way we did. This way we filter the unambiguous cases from the ambiguous cases. Based on the unambiguous cases a discussion about evidence for early H peaks is primarily possible. We annotated only pitch prominence on an initially unstressed syllable or a monosyllabic function word as an early H peak. Even if some H\* peaks may be non-accentual early H peaks as well.

For the annotation of pitch prominence, we decided to take a technical approach. At first, we identified pitch prominence visually and auditory within one phrase. Afterwards, the identified sectors where a high peak occurred were selected one after another and with the function move cursor to highest f0 it was decided where to place the symbol. If the cursor appeared to be within a syllable marked with x (lexical stressed syllable of a polysyllabic word or monosyllabic content word) the high peak was labelled as H\*. If the

cursor appeared to be on a syllable without an x (before the stressed syllable of a polysyllabic word or on a monosyllabic function word) the high peak was labelled as H. Boundary related tones at the right end of an intermediate or intonation phrase, so high peaks directly occurring before a type 3 or 4 boundary are not transcribed.

### **2.3 Data analysis**

Data were extracted from the Praat text grids using a Praat script. The script selected every word marked with an H or H\*. With these extracted words we created a table, containing the words, their label and whether they are mono- or polysyllabic. Afterwards, we classified all function words (for monosyllables as well as for polysyllables) to which lexical word class (e.g., determiner, preposition) they belong. Such a distinction of lexical word classes was also made for polysyllabic words with an early H peak, but not for polysyllabic words with an H\* peak. For all polysyllabic words labelled with H it was noted on which syllable the peak occurred to exclude those with a peak not on the initial one. Pitch prominence occurring on non-initial unstressed syllable are not further evaluated in the data report in chapter 3, though there will be a short review on them in the discussion part. We also had a look if polysyllabic words with an early H peak occurred with an H\* peak and extracted those cases. For these cases we created another table. Because of their different annotation procedures, we decided to treat mono- and polysyllabic words separately and parted the words according to syllable count into two tables. Within polysyllabic words we also distinguish between initial vs. non initial stressed words.

The data analysis includes a quantitative as well as a qualitative analysis. For the quantitative analysis data were statistically evaluated and plotted using R studio. This work only includes descriptive statistics. It is concerned with the frequency at which the two types of pitch prominences in MaltE occur. What is interesting for this preliminary attempt is that pitch prominence, that is analysed as a non-accentual early H peak on monosyllabic function words and initial unstressed syllables of polysyllabic words, occurs. The frequency (in percent) was calculated with the counts of the investigated pitch prominence (e.g., early H peaks on monosyllabic words) in relation to the total count of the higher category (e.g., all monosyllabic words with a pitch prominence). The supplementary qualitative analysis describes exemplary selected phrases and words. It presents words with an H\* peak or early H peak in their context, as well as noticeable phrases.

### 3. Data report

In this chapter, we shall present the results of the quantitative as well as qualitative data analysis. The chapter is organized as follows. Section 3.1 presents the frequency of high pitch prominence on polysyllabic words. Section 3.2 presents the frequency of high pitch prominence on monosyllabic words. Section 3.3 presents the supplementary qualitative analysis. A table with all examined words, their grammatical word class and their labelled pitch prominence (H or H\*) can be found in the appendix.

In total in this study, we annotated 666 words with a pitch prominence (H or H\*). The total count of early H peaks is 225 and the total count of H\* pitch peaks is 443, which makes a total of 668 recorded pitch peaks. The difference between the number of words and the number of pitch peaks results from two polysyllabic words receiving both an H and an H\* on the same word. To be able to clearly distinguish H and H\* it was decided to double list the words under the label of H and of H\*, treating them as occurring on different words for calculation. Therefore, the total count of words with a high pitch prominence calculated with is 668, of which 280 are polysyllabic words and 388 monosyllabic words. The mentioned words with simultaneous H and H\* will be dealt with more closely in section 3.1.

A first examination of the data reveals, that the largest frequency of early H peaks is recorded on monosyllabic function words with a total count of 179, followed by early peaks on polysyllabic content words with a count of 40. An early H peak for polysyllabic function words was only observed six times, which is the same number of H\* peaks on polysyllabic function words. Table 1 presents the distribution of pitch peaks (early H peaks and H\* peaks) separated according to content vs. function words and mono- vs. polysyllabic words.

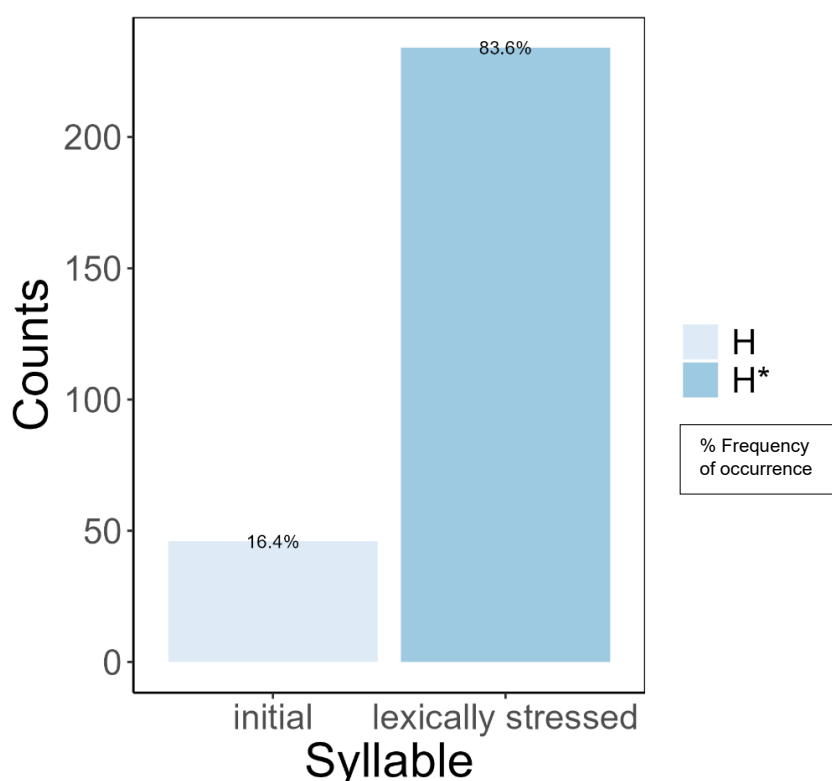
**Table 1:** Counts of H and H\* separated according to their grammatical word class and syllable count.

Syllables	Grammatical Word Class	Counts of H	Counts of H*	Total count
monosyllabic	content word	0	209	209
polysyllabic	content word	40	228	268
monosyllabic	function word	179	0	179
polysyllabic	function word	6	6	12



### 3.1 Frequency of H\* peaks and early H peaks on polysyllabic words

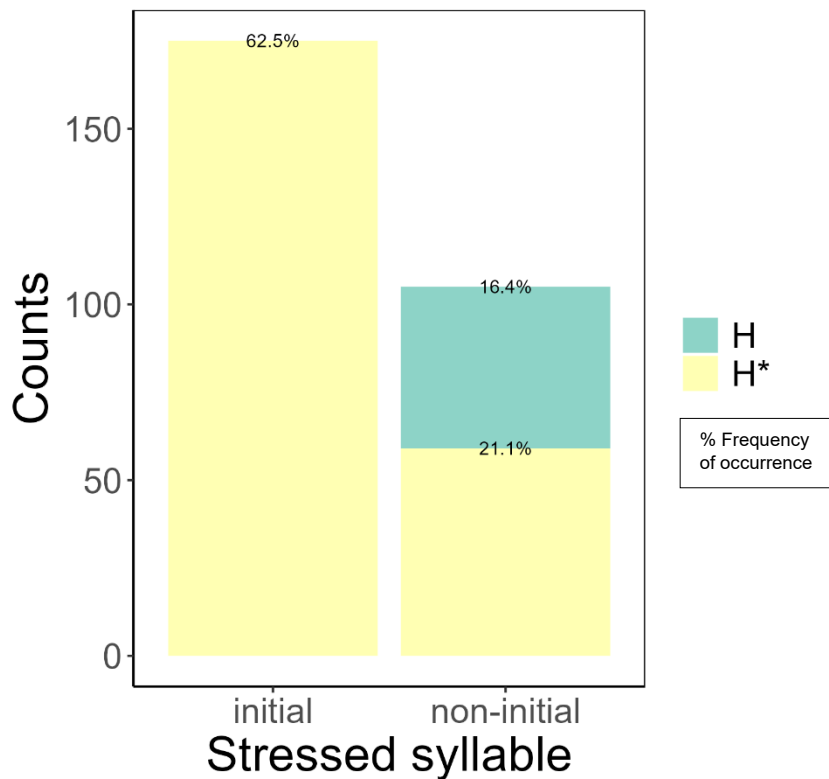
In this section we concentrate on pitch prominence on polysyllabic words. First, we have a look at how many times within polysyllabic words with a high pitch prominence the peak occurs on a stressed syllable and how many times on an initial unstressed syllable. The data reveals that for polysyllabic words the pitch prominence occurred 16.4% of the time on an initial unstressed syllable of the word (46 out of 280). In 83.6% of the time the pitch prominence occurred on a stressed syllable of a polysyllabic word (234 out of 280). Figure 6 shows the frequency and counts depending on the different pitch peaks for polysyllabic words.



**Figure 6:** Counts and frequency of pitch prominence (H and H\*) on polysyllabic words. Counts (y-axis) of the two types of pitch prominence (H and H\*) presented as a function of the syllable they occur on (x-axis). The fill colour of the bars allocates the bars additionally to their label (lighter blue = H; darker blue = H\*). The percentages on the bars describe the frequency of the different pitch peaks (counts in relation to the total number of polysyllabic words calculated with 280 and rounded to one decimal place).

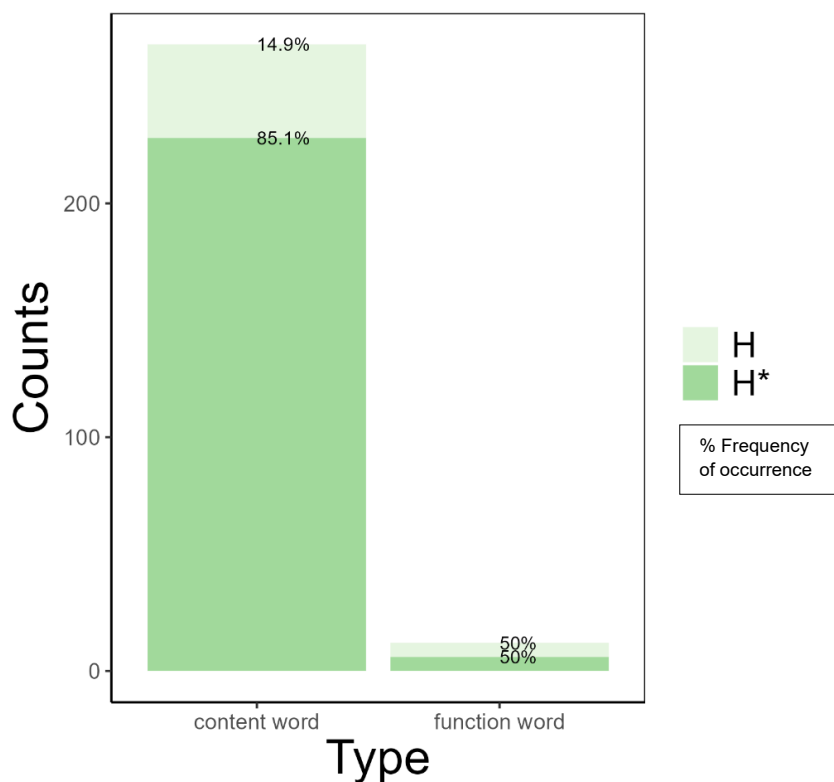
For polysyllabic words there is the possibility that the initial syllable is the lexically stressed syllable of the word. Hence, we can differentiate between an H\* peak on an initial syllable and on a non-initial syllable of a word. Figure 7 shows, that of all 280 words with a pitch prominence 175 words are initially stressed, which is a percentage of 62.5%. Only 105 of 280 words are not initially stressed. From those initially unstressed words 59 show

an H\* peak on a non-initial syllable, making a percentage of 21.1%. Thus, 46 polysyllabic words are unambiguous cases of an early peak (16.4%), where the pitch prominence is placed on an initial unstressed syllable.



**Figure 7:** Counts and frequency of pitch prominence (H and H\*) on polysyllabic words separated according to the lexical stressed syllable of the word. Counts of the two types of pitch prominence (y-axis) as a function of the lexical stressed syllable of the word (either initial or not initial). The fill colour of the bars allocates the bars to their pitch prominence (green = H; yellow = H\*). The percentages on the bars describe the frequency of the different pitch peaks (counts in relation to the total number of polysyllabic words calculated with 280 and rounded to one decimal place).

The division of polysyllabic words according to their grammatical word class shows, that six polysyllabic function words occur with an early H peak. The same number of function words appear with an H\* peak. This means for all polysyllabic function words with a pitch prominence 50% have an early H peak and 50% an H\* peak. From those six function words with an H\* peak, three words are initially stressed. By contrast, there were 40 polysyllabic content words with an early H peak. So, 14.9% of all polysyllabic content words with a pitch prominence happen to have an early peak. This stands against 85.1% of polysyllabic content words with a pitch peak on a stressed syllable. The stressed syllable was either an initial syllable (for 172 content words) or a non-initial syllable (for 56 content words). Figure 8 illustrates counts and frequency of pitch prominence on polysyllabic words separated according to content vs. function words.

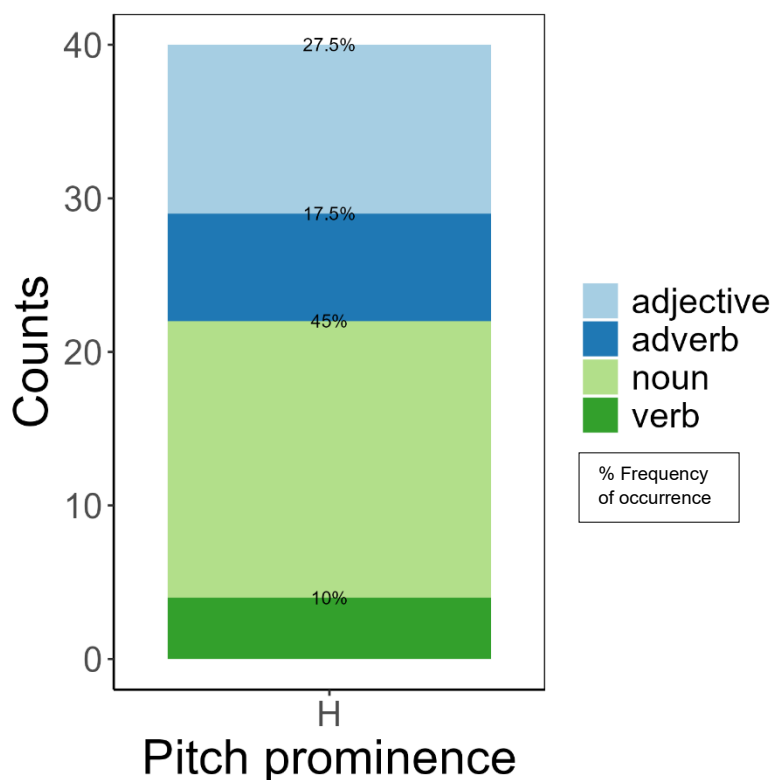


**Figure 8:** Distribution of pitch prominence separated according to grammatical word class. Counts (y-axis) of the pitch prominence as a function the two grammatical word classes (content vs. function words) (x-axis). The fill colour of the bars allocates the bars to the two types of pitch prominence (lighter green = H; darker green = H\*). The percentages on the bars show the distribution of pitch prominence within the grammatical word classes (counts in relation to the number of polysyllabic content words (268) and function words (12); rounded to one decimal place).

Further the subclassification of polysyllabic function and content words into lexical word classes and the frequency of early H peaks on the lexical word classes is presented. We start with function words. The same analysis for content words is described in the following paragraph. In general, there are only few polysyllabic function words with an early peak (six counts). Nevertheless, breaking down the polysyllabic function words into their word classes we can observe that largest group with early peaks are conjunctions, with three counts and therefore 50% of all polysyllabic function words with an early peak. 33.3% percent of polysyllabic function words with an early peak are prepositions (two counts) and 16.7% pronouns (one count).

Now we take a detailed look at the polysyllabic content words with an unambiguous case of non-accentual early peak and which word classes received an early peak at which frequency. Figure 9 shows the division of content words with an early peak by their word class and how often an early peak was recorded on the captured word classes. Verbs only received an early peak four times and therefore are the rarest word class (with a proportion

of only 10%). Nouns are, by contrast, the largest group, with 18 counts (45% of all content words with an early peak). The percentage of adjectives in content words with an early peak is 27.5% and for adverbs 17.5%.



**Figure 9:** Polysyllabic content words with an early H peak separated according to lexical word class. Counts (y-axis) of the early H peak (x-axis) grouped by their lexical word class (fill colour of the bar). The percentages on the bars show the distribution of the early H peak split according to lexical word class (counts in relation to the number of polysyllabic content words with an early peak (40); rounded to one decimal place). The fill colour of the bar allocates the bars to the different lexical word classes.

In the context of our study, it is also interesting to see, which words receive an early peak more than once. For our corpus the highest number of early H peaks for a polysyllabic word is, with three counts, recorded on the conjunction *beCAUSE*. But looking at this fact it needs to be mentioned, that the count of H\* peaks on the word *beCAUSE* is only one less.

Also interesting for polysyllabic words that are not initially stressed is the possibility, that they can occur with an early H peak as well a peak on the stressed syllable. As outlined above in our corpus potentially 59 of 280 words (21.1%). For monosyllable this is only possible if a function word receives an accent due to contrastive focus. In this case the pitch prominence can be considered an accent and has a highlighting function. For

example, the pronoun *my* in contrastive focus in a sentence like *in my opinion*. Table 2 demonstrates which words occurred with an early H peak and an H\* peak and to which grammatical word class they belong to. Eight words, including two that received both labels on the same word, occurred with H and H\*. It also shows their counts of H and H\*. The two bold printed words in the table are the ones where H and H\* occurred simultaneously. In this work capitalization indicates the stressed syllable of a word, as it was transcribed in Praat. For all words in this category, except for *beCAUSE* there is only one early peak recorded each, making *beCAUSE* especially interesting.

**Table 2:** Polysyllabic words occurring with H\* peak and early H peak. Capitalization indicates the stressed syllable. Bold printed words received an early H peak and H\* peak simultaneously on the same word.

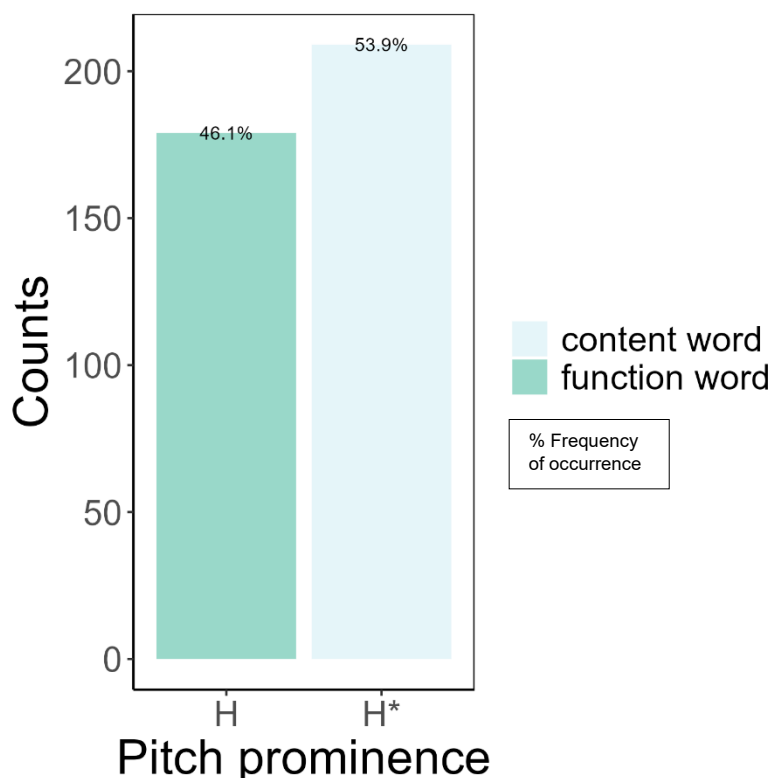
Word	Word Class	H Counts	H* Counts	Total count
beCAUSE	conjunction	3	2	5
soClety	content word	1	4	5
demoGRAphics	content word	1	3	4
diVORCE	content word	1	2	3
aNOther	content word	1	1	2
<b>enTIrely</b>	content word	1	1	1
<b>incomPATible</b>	content word	1	1	1
seCUrity	content word	1	1	2

### 3.2 Frequency of H\* peaks and early H peaks on monosyllabic words

As described above in chapter 2 the situation for monosyllables is in so far different from polysyllables, as for monosyllables the only syllable is always the stressed one and therefore a potential place for an accent. If we solely applied stressed vs. unstressed syllable, every pitch prominence on a monosyllabic word would at first need to be considered an H\* peak. The differentiation between pitch prominence therefore is not made based on whether it occurs on a stressed syllable or not, but whether it occurs on a function or content word. For monosyllabic content words the same reservation as for polysyllabic words with initial word stress is valid. It is not necessarily assumed that early H peaks cannot occur on monosyllabic content words, which more likely receive an accent.

At first, we take the same procedure as for polysyllabic words and have a look at early H vs. H\* peak without further subclassification. Figure 10 shows the distribution of monosyllabic words with pitch peak. There are 179 monosyllabic function words with a pitch prominence and 209 monosyllabic content words with an accentual pitch prominence (H\*). This means 46.1% from all annotated pitch peaks on monosyllables are

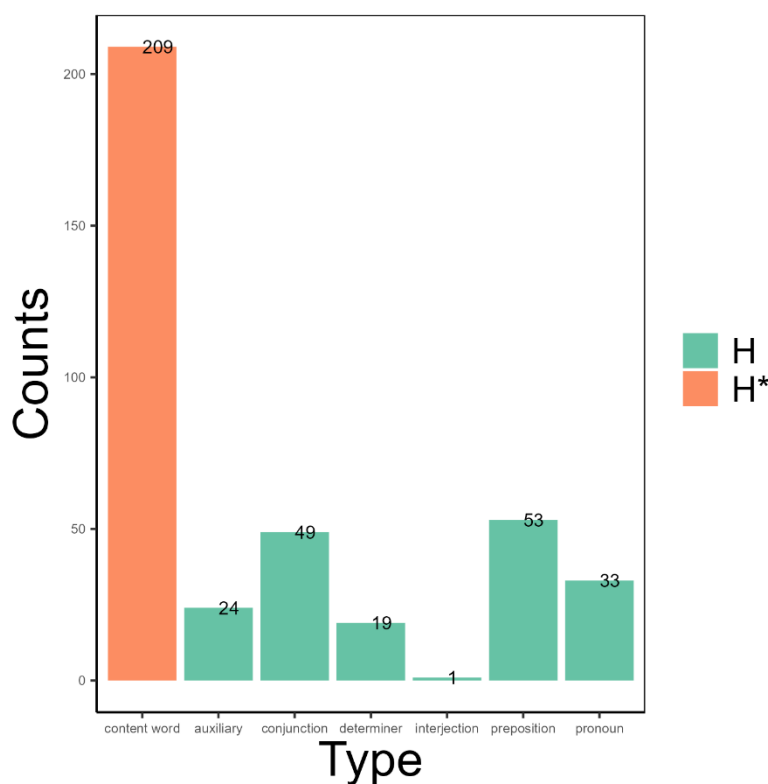
unambiguous cases of early H peaks. The percentage of H\* from all annotated pitch peaks on monosyllables is thus 53.9%. The distribution of pitch peaks therefore seems to be different in monosyllables than polysyllables. The total count of polysyllables with an early peak was 46 out of 280 polysyllabic words with a pitch prominence (16.4%).



**Figure 10:** Counts and percentage of the two types of pitch prominence on monosyllabic words. Counts (y-axis) of early H peak and H\* peak (x-axis). The percentages on the bars show the distribution of the pitch peaks (counts in relation to the number of monosyllabic words with a pitch prominence (388); rounded to one decimal place). The fill colour of the bars allocates the bars to their grammatical word class (light blue = content word; green = function word).

For further examination we subclassify those 179 function words with an early H peak. First, we show which word class is most present within early peaks. Figure 11 illustrates which function lexical word classes receive an early peak and how often this was the case. The largest group with early peaks is the word class of prepositions with 53 counts (29.6% of all early H peaks on monosyllables), closely followed by conjunctions with 49 counts (27.4%). Together this is 57%, so over half of the early peaks, occur on those two word classes. The other 43% are shared by four word classes. The smallest group with early H peaks is the word class of interjections with only one count. Excluding interjections, the next smallest group are determiners with 19 counts (10.6%). But this percentage of 10.6% needs to be seen in a greater context. While there are many prepositions in the data, there

are only three types of determiners recorded, which are *the* (12 tokens), *a* (6 tokens) and *and* (1 token). That means that only three words share the number of 19 counts, while for other word classes there are more types documented.



**Figure 11:** Counts of pitch prominence on monosyllabic words separated according to their grammatical word class (for content words) and to their lexical word class (for function words). Counts (y-axis) of pitch prominence as a function of grammatical/lexical word class. The fill colour of the bars allocates the bars additionally to the two types of pitch prominence (green = H; orange = H\*).

Now we go in further detail as to which monosyllabic words receive an early H peak. Table 3 gives a detailed description which words occur with an early H peak more than once, to which lexical word class these words belong and how often they received an early H peak. 20 words received an early H peak only one time and are not reflected in table 3. As can be seen from table 3 the monosyllabic word that received an early peak most often is the conjunction *and* with 24 counts (13.4% of all early peaks on monosyllables). Interestingly the same pattern as for polysyllabic function words is found, where the word with the highest count of early peaks is a conjunction too (three counts). The next highest count of early peaks is 15 on the preposition *to* (8.4% of all early peaks on monosyllables), followed by the preposition *in* (7.8%), the determiner *the* (6.7%) and the conjunction *so* (5.6%), for words with a count of two digits.

**Table 3:** Monosyllabic function words occurring with an early H peak more than once. The column count shows the number how often the word occurred with an early peak.

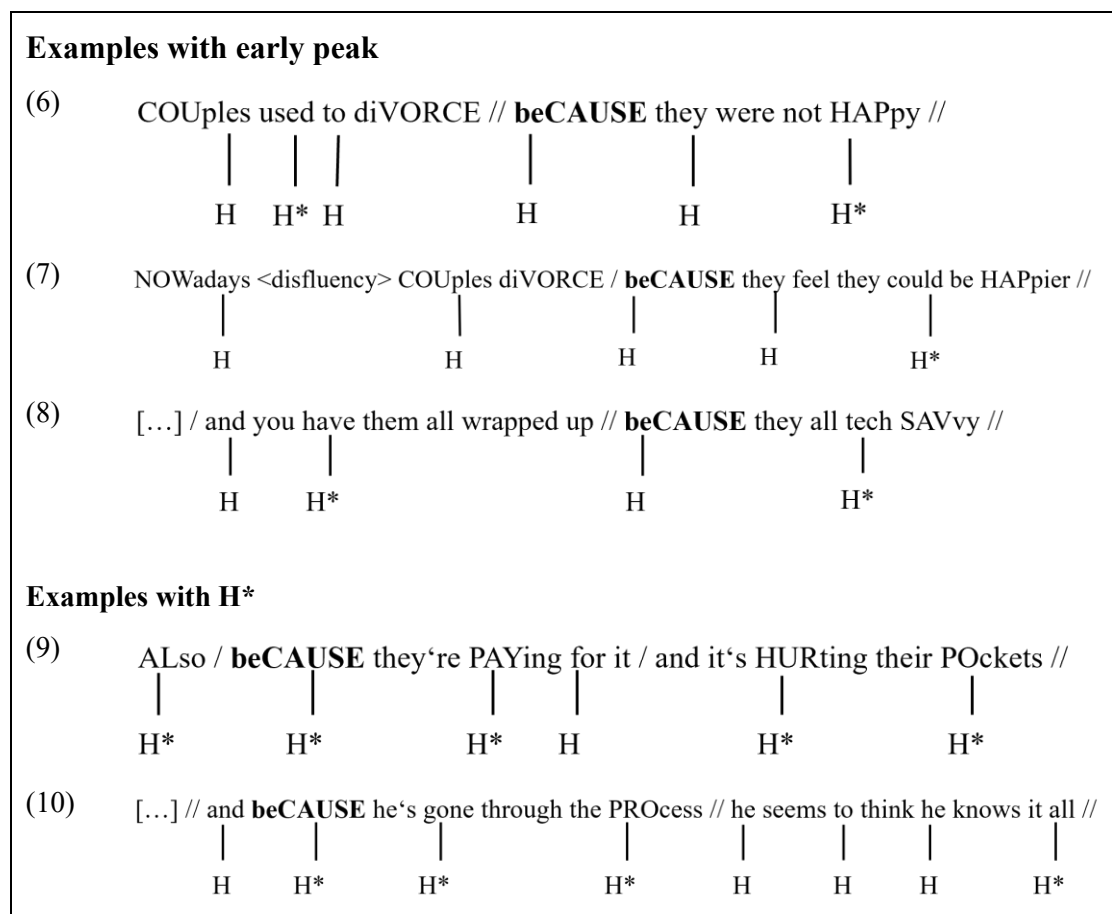
Word	Type	Count
and	conjunction	24
to	preposition	15
in	preposition	14
the	determiner	12
so	conjunction	10
they	pronoun	7
a	determiner	6
for	preposition	6
is	auxiliary	6
of	preposition	6
on	preposition	5
are	auxiliary	4
have	auxiliary	4
I	pronoun	4
my	pronoun	4
till	conjunction	4
from	preposition	3
he	pronoun	3
or	conjunction	3
this	pronoun	3
as	conjunction	2
but	conjunction	2
do	auxiliary	2
if	conjunction	2
it's	pronoun	2
these	pronoun	2
was	auxiliary	2
with	preposition	2

### 3.3 Qualitative analysis of the data

In the section above we carried out a quantitative analysis of pitch peaks annotated as H and H\*. This section includes a supplementary qualitative analysis of the data. The in chapter 3.1 described cases where the early H peak and the H\* peak occurred on the same word (table 2) indicate that there may be a differentiation between H\* and H, under which condition the initial syllable receives a pitch prominence and under which condition the stressed syllable receives a pitch prominence. This is especially interesting for the function word *beCAUSE*, where usually no accent would be expected and the probable accents on the stressed syllables (H\*) seem out of place. Because of this it was decided to include



these examples in our qualitative analysis. Figure 12 contains example 6 to 10 and illustrates all cases where *beCAUSE* received a pitch prominence and its context.



**Figure 12:** Every occurrence of *beCAUSE* with a pitch prominence (bold printed) either H or H\* with context. A single slash / indicates a type 3 boundary. A double slash // indicates a type 4 boundary. The tones get connected with their syllable through lines. Every syllable without a connected H tone, is lower than the neighbouring syllables and therefore referred as low (L).

What is striking in example 6-8 the word *beCAUSE* occurs behind a type 3 or 4 boundary and begins a phrase. All three examples receive an early H peak. For example 9 *beCAUSE* also occurs directly after a type 3 boundary, but here gets a pitch prominence on the stressed syllable. In example 9 as it is the case for example 10 *beCAUSE* syntactically does not occur sentence initial but at second place. Interestingly for example 10 the conjunction that connects the two clauses *and* does receive an early peak. The same pattern happens for *and* after the type 3 boundary in example 8. In example 6 and 7 the word *COUples* both times receives pitch prominence on the unstressed syllable this fact will be further set out in the discussion part.

Another observed point was the alternation of high and low syllables following a pattern. The description as low means that in relation to the high syllables they are lower (so low means without a high pitch peak), it does not imply that those are low target tones. I chose example 11, 12 and 13 to illustrate such cases.

(11) lets take a quick glimpse at the CONcept of MARriage throughOUT HIStory //

|            |                    |            |                    |            |            |

H\*          H\*                    H            H                    H            H\*

(12) and they say that HAPpy MARried COUples / are less stressed //

|            |            |            |            |            |

H          H\*          H\*          H\*          H\*          H

(13) we lead to the change brought aBOUT by / [...]

|            |                    |

H          H                    H

As the examples show there is an alternation of high and low syllables. In example 11 there is a high pitch prominence followed by two low syllables. This pattern repeats until the last word which is *HIStory*. In comparison to all other high peaks the  $f_0$  of *HIStory* is relatively low. For *HIStory* the highest calculated  $f_0$  value is 245 Hz and the surrounding is relatively low with a moderate rise to the pitched syllable. Where for the word *lets* the highest calculated  $f_0$  value is 560 Hz and the rise towards the pitched syllable is rapid, as well as the fall to the following syllable *take* with a minimum  $f_0$  frequency of 207 Hz. The other values are *quick* 463 Hz, *the* 341 Hz, *of* 358 Hz and *throughOUT* 371 Hz. For *throuOUT* the increase is also rapid, for the preceding syllable *riage* of the word *MARriage* shows a maximum pitch of 189 Hz. Even with bearing in mind declination the difference in  $f_0$  frequency of the last considered early peak to the considered pitch accent and the tendency of a rapid vs. moderate rise is noticeable.

In example 12 the pattern is a syllable with a high pitch prominence followed by a low syllable. Example 13 shows an alternation pattern like in example 11 with a high pitch prominence followed by two low syllables. In this example the pronoun *we*, the determiner *the* and the adverb *aBOUT* receive high pitch peaks, *aBOUT* even on the unstressed syllable. The only noun of the sentence does not receive a high pitch prominence.

## **4. Discussion**

This chapter discusses the observations reported in the data report and integrates them into a greater context. First, in section 4.1, we outline the evidence we obtained from the data, and subsequently suggest the existence of non-accentual early H peaks in MaltE on basis of this evidence. Section 4.2 forms a general discussion on the early H peak in MaltE, elaborating on the potential function of the early H peak, the place of its occurrence, and the relation to primary literature.

### **4.1 Evidence for an early H peak in Maltese English**

This section discusses the evidence we obtained from the reported data and suggests the existence of a non-accentual early H peak in MaltE. The qualitative analysis (section 3.3) is addressed here supplementing the results of the quantitative analysis reported in section 3.1 and 3.2.

As described in the previous chapters, it has been claimed that there are early H peaks in MaltE which do not reflect properties of a pitch accent, and therefore are non-accentual. Research to date has not yet defined exactly where an early H peak occurs, as well as its function. The investigation of early H peaks is not an easy task, because potentially every pitch prominence on an initial syllable or on a monosyllabic word may be an early H peak. The only pitch prominence that is unambiguously not an early H peak is a pitch peak, that occurs on a non-initial stressed syllable in polysyllabic words. Any other occurring pitch prominence may or may not be an early peak, even if annotated as H\* (in particular on a polysyllabic word with initial word stress or monosyllabic content word). Or put differently, the reservation concerning H\* peaks on initial stressed syllables of polysyllabic words or monosyllabic content words is: it is not necessarily that an early H peak cannot occur on stressed syllables or on a commonly accentuable words with semantic weight. This sets up ambiguity because such pitch peaks may be either regular pitch accents or non-accentual early H peaks. This potential overlap blurs the picture. This is the reason why we followed the reported annotation workflow (section 2.2). Our workflow allowed us to filter the unambiguous cases and annotated as early H peaks only high pitch prominences on initially unstressed syllables or monosyllabic function words.

Our annotation procedure showed, that 46 of 280 (16.4%) polysyllabic words with pitch prominence reflect unambiguous cases of an early H peak, meaning that the pitch prominence is placed on an initial unstressed syllable. 179 of 388 (46.1%) pitch peaks occurred on monosyllabic function words, which we similarly considered unambiguous

cases of early H peaks. Pitch prominence on a function word would be considered a pitch accent only if it denoted contrastive focus. This would be only expected in a handful of cases. A percentage of 46.1% is too much to be only seen under the aspect of information structure. In our corpus 33.7% of all 668 recorded pitch peaks are considered to be unambiguous cases for a non-accentual early H peak. Monosyllabic function words in this corpus are the largest group with an unambiguous early H peak. Depending on the function of the early H peak this could have several reasons. A reason for this may be that many words in the vocabulary are initially stressed and it may be that an early H peak in these cases cannot be placed on the initial syllable, but instead gets placed on the syllable before the initial syllable of the word, even across word boundaries (M. Grice, personal communication, September 20<sup>th</sup>, 2023). This syllable is very often a function word (M. Grice, personal communication, September 20<sup>th</sup>, 2023). It also may be the case that this shift to the preceding word is only possible if it forms a grammatical phrase with the word. For a noun this could mean, that if there is no preceding word belonging to the noun phrase (like an adjective or a preposition), it may be that the early H peak nevertheless occurs on the initial stressed syllable. One point that can be addressed here is, that function words in MaltE may be easier to associate with a tonal movement (or even accent), because Maltese tends to produce unreduced vowels over reduced vowels (Grech & Vella 2018: 203, 220).

We now move to the observations of the supplementary qualitative analysis. Therefore, the analysed examples 11-13 from section 3.3 are one more time presented in this section.

(11) lets take a quick glimpse at the CONcept of MARriage throughOUT HISTory //

|            |                    |            |                    |            |            |

H\*        H\*                    H            H                    H            H\*

(12) and they say that HAPpy MARried COUPles / are less stressed //

|            |            |            |            |            |

H        H\*        H\*        H\*        H\*        H

(13) we lead to the change brought aBOUT by / [...]

|            |                    |

H        H                    H

The alternation pattern found in the data between high and relative low syllables<sup>8</sup> (example 11-13), shows that there is a striking amount of pitch prominence in MaltE within one phrase (even on unstressed syllables or monosyllabic function words). At least from the perspective of MEVs. In MEVs pitch accents are rarely distributed (Grice, German & Warren 2021: 287). This amount of pitch prominence in one phrase could mean two things:

1. MaltE tends to have more pitch accents and for example more focus exponents in broad focus than MEVs.
2. Some of the pitch peaks are in fact non-accentual, rather they are early H peaks (even on stressed syllables or monosyllabic content words).

In example 11 there is a high pitch prominence followed by two relative low syllables. This pattern repeats until the last word of the phrase which is *HIStory*. *HIStory* receives a pitch prominence that is out of that alternation pattern. This is noticeable, because it is the last noun of the phrase, which is in MEVs, in an unmarked sentence (broad focus), usually the focus exponent and therefore the accented element. Hence, we have an indication that this out of the alternation pattern H\* on the stressed syllable of the word might be a regular pitch accent or in this particular example even the nuclear accent of the phrase. For the other high pitch prominences, it seems like they do not have the function of focus marking, even due to their sheer amount. A pitch prominence on the adjective *quick* is unusual and does not fit the information status of the element, as a glimpse is already quick in its semantic meaning. Further, this adjective would need to be in narrow or contrastive focus to receive an accent. Also, the pitch prominence on the function words *the* and *of* do not fit the information structure of the phrase. Even if the pitch peaks would be analysed as belonging to a H+L\* sequence, and hence as accentuation of the following nouns, the number of pitch accents (from a perspective of MEVs pitch accent distribution), for an intonation phrase is a lot. This would mean that every noun of the phrase would be accented. What is also striking is the f0 measurement and range (section 3.3). The f0 is relatively low for the assumed pitch accent with a modal rise towards the accented syllable *HIStory* in comparison to the other pitch peaks with a really high f0 and a rapid rise towards the pitched syllable. This implies there could be a distinction of early H peaks and pitch accents on basis of relative height and tonal onglide. This is an indication that not all annotated H\* pitch peaks are accents (e.g., H\* on *quick* relative high with

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<sup>8</sup> The syllables are low in such manner as in relation to the high syllables they are lower (so low here means without a high pitch peak), it does not imply that those are low target tones.

a rapid rise). If this pitch prominence is analysed as non-accentual, this consequently means an early H peak can occur on the stressed syllable of a word or on a monosyllabic content word. This could potentially indicate that the occurrence of an early H peak may be independent of stress or no stress but relies solely on the left edge of a word.

In example 12 the observed pattern is a syllable with a high pitch prominence followed by a relatively low syllable. Here it is again observable that the amount of pitch prominence does not fit the information structure of the phrase and the distribution of pitch accents in MEVs. In this example it is not totally clear which of the pitch peaks is the nuclear accent but based on the context and by listening to the sentence it is assumed that it is on *HAPpy* (in contrast to unhappy couples). This could be a first indication that there is pitch prominence after the nuclear accent of the phrase. What is even more striking is the fact that in contrastive/narrow focus usually only one element is focused. Hence, this example suggests that the other occurring pitch prominence (on *and*, *say*, *MARried*, *COUples*) are non-accentual.

Example 13 shows an alternation pattern, as we saw in example 11, with a high pitch prominence followed by two low syllables. In this example, the pronoun *we*, the determiner *the* and the adverb *aBOUT* receive pitch peaks. The word *aBOUT* receives the pitch peak on the unstressed syllable. The only noun of the sentence, that in broad focus would be expected to serve as focus exponent, does not receive a pitch prominence. This could be because it is associated with a low pitch accent (resulting in a sequence of H+L\*). This is an interesting point for future research because it could indicate that pitch accents in MaltE are more favoured to be expressed through low targets. This would somehow restore the mapping between pitch prominence and focus/information structure. Because a high pitch peak is ambiguous (it could be an early H peak or an accent), but a low target would be used unambiguous for accentuation. For the other high pitch peaks in example 13 the analysis as H+L\* would be unlikely because in this case a verb would be focus element of this phrase. For early H peaks a potential explanation is that they may be the result of a stress shift, leading to a usually unstressed syllables receiving stress and then being able to receive an accent. For Maltese wh-words this possibility has been ruled out by several points (Lialiou et al. 2021: 164), that are provided in section 1.2. For our corpus data the stress shift is also ruled out by the fact that the early H peak is likely to occur on monosyllabic function words. If it would be analysed as stress shift this would mean that the stress could shift beyond word boundaries.

We can therefore conclude that MaltE has non-accentual early H peaks.

## 4.2 General discussion

We now discuss the existence of early H peaks in MaltE in greater context. First, we discuss where early H peaks occur and if there is evidence for their specific placement. Examples 6-10 described cases where the early H peak and the accentual H\* occurred on the word *beCAUSE* (Figure 12). This indicates that there may be a differentiation between H\* and H, in which case the word receives an early H peak and in which case it receives a pitch accent. For examples 9 and 10 the pitch peak occurs on the stressed syllable. In these cases, they can be thought of as usual pitch accents. This would also fit the context, giving focus to the element that introduces the reason and therefore accentuate *beCAUSE*. But what is surprising for example 10 is that we can find an alternation pattern of high and low syllables, like in examples 11-13. The high pitch peak on the stressed syllable of *beCAUSE* is not breaking this alternation. This could be interpreted in several ways. First, it could be by accident that a pitch accent is fitting to the pattern. Second, the pattern is adjusted to pitch accents and is built around pitch accents for example due to rhythmic reasons (which would require a lot of planning of an utterance and is also somehow ruled out by example 6, where the assumed nuclear accent is breaking the pattern). Third, there is no intended pattern (the pattern happens by accident). And fourth, it is analysed an accent (accentual sequence L\*+H). The fourth point somehow fits to example 6 and 7 where the word *COUples* receives a pitch peak on the unstressed syllable. It also fits for another example, where the second syllable of *SOMEone* is associated with a pitch peak (example 14). In example 9 *SOMEone* is the most favoured to be the focus exponent in this phrase with broad focus. However, for examples 1, 2 and 9 it is possible to suggest that they are part of an accentual sequence (L\*+H). This sequence would further underpin the hypothesis in section 4.1, that accents may be realised through low target tones. The L\*+H accent type in Maltese is also described by Vella (1995: 161ff.). But such a realisation of a pitch peak on an unstressed syllable of a word, which is thought to be a focused element, could also result from a reported stress deafness effect for Maltese bilingual speakers (Lialiou et al. 2023) (ref. section 1.2) and therefore might be an H\* accent placed on the false syllable. Another approach would be the analysis as the result from the reported stress shift in MaltE (section 1.3.4). In this case, in fact the second syllable would be the stressed syllable of the word and not the first.

- (14) SOMEone might ask / [...]  
 |  
 H

What is a striking finding is the fact that the early H peak occurred most likely on conjunctions. Conjunctions connect clauses and therefore often stand at the beginning of an intermediate phrase. Consequently, the early H peak might be associated with the left edge of the phrase. In our corpus also one conjunction with initial word stress and a pitch peak classified as H\* can be found. This could indicate that early H peaks mark the beginning of a phrase and maybe has an edge marking function. A counterargument for this is, that for Maltese it was shown that the early H peak on wh-words occurred independent from their position in the phrase (in interrogatives) (Grice, Vella & Bruggeman 2019; Lialiou et al. 2021). This proposes that the early H peak is associated with the left edge of the word, not with the left edge of the phrase. And the early H peak occurs as a function of sentence modality (Grice, Vella & Bruggeman 2019; Lialiou et al. 2021). Also, the early H peaks occurs on prepositions or on other function words in the middle of a phrase. The frequency of early H peaks on determiners (10.6% of all early H peaks on monosyllables) and prepositions (29.6% of all early H peaks on monosyllables) could indicate that they maybe associated to the left edge of a smaller grammatical unit, like a noun phrase. The early H peaks also happens to occur on function words preceding a content word, what suggests that the domain might be larger than the lexical word (e.g., prosodic word). Monosyllabic function words are the biggest group with an early H peak.

## 5. Conclusion

This thesis investigated pitch prominence in Maltese English. It intended to provide a preliminary attempt to the existence of non-accentual early H peaks in Maltese English. The study investigated a TEDx Talk and hence analysed semi-spontaneous speech that was not recorded for the purpose of research. The study showed that in Maltese English high pitch peaks occur on monosyllabic function words and unstressed syllables of polysyllabic words, which are considered unambiguous cases of early H peaks. The early H peaks occurring on function words preceding a content word suggest that the domain of association might be larger than the lexical word on the prosodic level (e.g., prosodic word). The supplementary qualitative analysis showed that Maltese English has a striking number of pitch peaks within one intonation phrase from a perspective of mainstream



varieties of English and under the light of focus marking. The evidence from this study suggests that Maltese English has non-accentual early H peaks. Pitch prominence analysed as an early H peak also occurred on initially stressed syllables of polysyllabic words. This implies that the early H peak might be associated with the left edge of a word and can occur irrespective of whether this is a stressed syllable or not. On basis of the data analysed, it appears that the pitch contour following the early H peak is generally rather flat, indicating that, if there are pitch accents in Maltese English following such peaks, they would be likely to be analysed as low toned.

A limitation of the study is that, in the absence of a Maltese English pronunciation dictionary, lexical word stress was taken from a Standard English dictionary. This may have led to errors in certain cases of regularisation of stress rules to the standard penultimate pattern. Moreover, it should be kept in mind that this work only provides a preliminary attempt and analysed a relatively small corpus with only one speaker. Future research can investigate the early H peak in Maltese English further and can shed further light on different aspects, for example its function.

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## Appendix

**Table 4:** Polysyllabic words with pitch prominence (either an early H peak or H\* peak) presented with their grammatical or lexical word class. Capitalization indicates the stressed syllable of the word.

Word	Type	Label
NOWadays	content word	H*
apPROXimately	content word	H*
FIFTy	content word	H*
perCENT	content word	H*
diVORCE	content word	H*
TWENTy	content word	H*
exPERience	content word	H*
THOUsand	content word	H*
HIStory	content word	H*
MANy	content word	H*
VARious	content word	H*
MARriage	content word	H*
syNONymous	content word	H*
soCIety	content word	H*
disPLAY	content word	H*
POWer	content word	H*
FAMilies	content word	H*
WOmen	content word	H*
WORKplace	content word	H*
seCUrity	content word	H*
INcome	content word	H*
MARriage	content word	H*
conSIDered	content word	H*
SERious	content word	H*
FRAGile	content word	H*
eMOtion	content word	H*
Widely	content word	H*
conSIDered	content word	H*
enTIrely	content word	H*
incomPATible	content word	H*
MARriage	content word	H*
BUSiness	content word	H*
LINKing	content word	H*
HEAvens	content word	H*
MARriage	content word	H*
TWENTy	content word	H*
CENtury	content word	H*
MARriage	content word	H*
RELatively	content word	H*
CONcept	content word	H*
PRACtical	content word	H*

MARried	content word	H*
staTIStics	content word	H*
HAPpy	content word	H*
BETter	content word	H*
LONger	content word	H*
BETter	content word	H*
HAPpy	content word	H*
MARried	content word	H*
COUples	content word	H*
mySELF	pronoun	H*
MARried	content word	H*
CHILdren	content word	H*
VIision	content word	H*
FUture	content word	H*
MARriage	content word	H*
JOURney	content word	H*
CHANges	content word	H*
soCIety	content word	H*
WOmen	content word	H*
soCIety	content word	H*
supPOSED	content word	H*
Equal	content word	H*
FOOting	content word	H*
COUNterparts	content word	H*
MARriage	content word	H*
beFORE	conjunction	H*
WOmen	content word	H*
conSIDered	content word	H*
WORKplace	content word	H*
SERiously	content word	H*
profESsionally	content word	H*
Oftentimes	content word	H*
oPinion	content word	H*
Equal	content word	H*
COUples	content word	H*
COUples	content word	H*
PEOPLE	content word	H*
SITting	content word	H*
SIBlings	content word	H*
BOAsting	content word	H*
HAPpily	content word	H*
MARriage	content word	H*
TElLing	content word	H*
WEDding	content word	H*
TERrible	content word	H*
HUSband	content word	H*
HOnymoon	content word	H*
VEry	content word	H*

reACtion	content word	H*
exPLAining	content word	H*
reCEption	content word	H*
HOneymoon	content word	H*
CONsummate	content word	H*
LAUghing	content word	H*
DEcades	content word	H*
MARriage	content word	H*
toGEther	content word	H*
moNOgamy	content word	H*
PARTner	content word	H*
moNOgamy	content word	H*
apPEaring	content word	H*
MAjor	content word	H*
SOcial	content word	H*
MEdia	content word	H*
IMpact	content word	H*
COUples	content word	H*
MARriage	content word	H*
beFORE	content word	H*
HASHtagged	content word	H*
THOUsands	content word	H*
Images	content word	H*
INstagram	content word	H*
SOcial	content word	H*
INfluenced	content word	H*
FOLlow	content word	H*
FACEbook	content word	H*
INstagram	content word	H*
TWITter	content word	H*
SNAPchat	content word	H*
CLUBhouse	content word	H*
HAven't	content word	H*
BOTtom	content word	H*
reMAINS	content word	H*
SOcial	content word	H*
reMARriage	content word	H*
diVORCE	content word	H*
beCAME	content word	H*
HAPpy	content word	H*
WORking	content word	H*
DAILY	content word	H*
COUples	content word	H*
Ages	content word	H*
beLIEVE	content word	H*
THINKing	content word	H*
miSTAKE	content word	H*
NEver	content word	H*

ALways	content word	H*
GREEner	content word	H*
advoCAtIng	content word	H*
thirTEEN	content word	H*
TRYing	content word	H*
aDAPT	content word	H*
soCIety	content word	H*
FOLlow	content word	H*
comPLEtely	content word	H*
DIFferent	content word	H*
LOVely	content word	H*
eVENT	content word	H*
LOVELy	content word	H*
beLIEVE	content word	H*
MAking	content word	H*
BEAUtiful	content word	H*
FLAWless	content word	H*
POSSible	content word	H*
Over	preposition	H*
INdustry	content word	H*
CLients	content word	H*
MARriage	content word	H*
TWENTy	content word	H*
CHILDhood	content word	H*
demoGRaphics	content word	H*
BOOmers	content word	H*
NINeteen	content word	H*
sixtyFOUR	content word	H*
POSSibly	content word	H*
THIRty	content word	H*
JUnior	content word	H*
EIGHTies	content word	H*
SEcond	content word	H*
SPENding	content word	H*
POWer	content word	H*
VEry	content word	H*
EIGHTies	content word	H*
NINEties	content word	H*
INstagram	content word	H*
INstagram	content word	H*
demoGRaphics	content word	H*
MARriage	content word	H*
beGINS	content word	H*
HIStory	content word	H*
eXAMples	content word	H*
VArious	content word	H*
CULTures	content word	H*
PArents	content word	H*



WEDding	content word	H*
WEDding	content word	H*
CAREfully	content word	H*
INtimate	content word	H*
WEDdings	content word	H*
ALso	content word	H*
beCAUSE	conjunction	H*
PAYing	content word	H*
HURting	content word	H*
POckets	content word	H*
BIGger	content word	H*
comMITment	content word	H*
SAYing	content word	H*
VEry	content word	H*
CENtric	content word	H*
PLANning	content word	H*
COMmon	content word	H*
inVOLVED	content word	H*
SEcond	content word	H*
beCAUSE	conjunction	H*
PROcess	content word	H*
inVOLVED	content word	H*
aNOther	content word	H*
WEDdings	content word	H*
STRONger	content word	H*
BABy	content word	H*
FNally	content word	H*
celeBRATE	content word	H*
ALways	content word	H*
demoGRaphics	content word	H*
COUples	content word	H*
COMmon	content word	H*
WEDding	content word	H*
HUSband	content word	H*
WEDding	content word	H*
reMAIN	content word	H*
LARgely	content word	H*
fifTEEN-fortyNINE	content word	H*
PEOPle	content word	H*
LONger	content word	H*
CLEARly	content word	H*
CLEARly	content word	H*
DIFficult	content word	H*
Other	pronoun	H*
beLIEVE	content word	H*
Even	content word	H*
JOURney	content word	H*
CERtainly	content word	H*

WHEther	conjunction	H*
throughOUT	preposition	H
transACtion	content word	H
pre-arRANGED	content word	H
fiNANcial	content word	H
exCHANGE	content word	H
enTIrely	content word	H
incomPATible	content word	H
surPRising	content word	H
dicTATE	content word	H
beCOME	content word	H
aBOUT	preposition	H
consideRAtion	content word	H
imPORtant	content word	H
fiNANcial	content word	H
seCUrity	content word	H
exPOSED	content word	H
eXEcutive	content word	H
reSULT	content word	H
surVIVED	content word	H
fortyFIVE	content word	H
redeFINED	content word	H
aNOther	content word	H
linkedIN	content word	H
reACT	content word	H
aBOUT	preposition	H
diVORCE	content word	H
beCAUSE	conjunction	H
beCAUSE	conjunction	H
opporTunity	content word	H
aGAIN	content word	H
soCIety	content word	H
toWARDS	preposition	H
inEvitably	content word	H
demoGRaphics	content word	H
ninetyNINE	content word	H
geneRAtion	content word	H
beCAUSE	conjunction	H
enTIrety	content word	H
reSULT	content word	H
geneRAtion	content word	H
themSELVES	pronoun	H
unCHANGED	content word	H
fifTEEN	content word	H
fortyNINE	content word	H
apPLIES	content word	H
foREver	content word	H

**Table 5:** Monosyllabic words with pitch prominence (either an early H peak or an H\* peak) and their grammatical or lexical wordclass.

<b>Word</b>	<b>Type</b>	<b>Label</b>
death	content word	H*
part	content word	H*
why	content word	H*
first	content word	H*
helped	content word	H*
one	content word	H*
some	content word	H*
lets	content word	H*
quick	content word	H*
they	content word	H*
heirs	content word	H*
based	content word	H*
love	content word	H*
once	content word	H*
more	content word	H*
most	content word	H*
thank	content word	H*
come	content word	H*
not	content word	H*
role	content word	H*
love	content word	H*
still	content word	H*
fact	content word	H*
brings	content word	H*
less	content word	H*
say	content word	H*
not	content word	H*
sure	content word	H*
less	content word	H*
what	content word	H*
day	content word	H*
try	content word	H*
get	content word	H*
find	content word	H*
true	content word	H*
goals	content word	H*
grow	content word	H*
ask	content word	H*
let's	content word	H*
play	content word	H*
change	content word	H*
now	content word	H*
don't	content word	H*
need	content word	H*

world	content word	H*
same	content word	H*
men	content word	H*
sex	content word	H*
not	content word	H*
top	content word	H*
not	content word	H*
more	content word	H*
not	content word	H*
sex	content word	H*
change	content word	H*
used	content word	H*
get	content word	H*
now	content word	H*
stop	content word	H*
few	content word	H*
huge	content word	H*
lot	content word	H*
people	content word	H*
ten	content word	H*
aunt	content word	H*
uncle	content word	H*
day	content word	H*
sick	content word	H*
flu	content word	H*
near	content word	H*
days	content word	H*
Rome	content word	H*
years	content word	H*
flu	content word	H*
flu	content word	H*
night	content word	H*
sat	content word	H*
two	content word	H*
look	content word	H*
change	content word	H*
sex	content word	H*
used	content word	H*
one	content word	H*
one	content word	H*
least	content word	H*
change	content word	H*
brought	content word	H*
huge	content word	H*
thing	content word	H*
not	content word	H*
changed	content word	H*
way	content word	H*

changed	content word	H*
way	content word	H*
who	content word	H*
Tick	content word	H*
all	content word	H*
changed	content word	H*
all	content word	H*
both	content word	H*
ways	content word	H*
used	content word	H*
could	content word	H*
new	content word	H*
way	content word	H*
fight	content word	H*
world	content word	H*
end	content word	H*
look	content word	H*
say	content word	H*
done	content word	H*
grab	content word	H*
good	content word	H*
right	content word	H*
first	content word	H*
life	content word	H*
say	content word	H*
grass	content word	H*
not	content word	H*
still	content word	H*
years	content word	H*
two	content word	H*
what	content word	H*
get	content word	H*
first	content word	H*
then	content word	H*
way	content word	H*
all	content word	H*
led	content word	H*
pool	content word	H*
this	content word	H*
age	content word	H*
most	content word	H*
ask	content word	H*
what	content word	H*
nine	content word	H*
time	content word	H*
not	content word	H*
case	content word	H*
do	content word	H*

best	content word	H*
now	content word	H*
go	content word	H*
act	content word	H*
not	content word	H*
fresh	content word	H*
three	content word	H*
born	content word	H*
old	content word	H*
age	content word	H*
found	content word	H*
mid	content word	H*
tend	content word	H*
peak	content word	H*
have	content word	H*
brands	content word	H*
born	content word	H*
think	content word	H*
tech	content word	H*
still	content word	H*
has	content word	H*
why	content word	H*
when	content word	H*
all	content word	H*
changed	content word	H*
not	content word	H*
span	content word	H*
let	content word	H*
give	content word	H*
some	content word	H*
not	content word	H*
guests	content word	H*
now	content word	H*
own	content word	H*
choose	content word	H*
tend	content word	H*
bit	content word	H*
moved	content word	H*
bright	content word	H*
why	content word	H*
most	content word	H*
gone	content word	H*
all	content word	H*
X	content word	H*
most	content word	H*
time	content word	H*
feel	content word	H*
yes	content word	H*

what	content word	H*
all	content word	H*
take	content word	H*
true	content word	H*
times	content word	H*
all	content word	H*
days	content word	H*
part	content word	H*
vows	content word	H*
changed	content word	H*
now	content word	H*
death	content word	H*
part	content word	H*
time	content word	H*
still	content word	H*
no	content word	H*
stand	content word	H*
too	content word	H*
doesn't	content word	H*
last	content word	H*
first(off)	content word	H*
till	conjunction	H
of	preposition	H
in	preposition	H
in	preposition	H
the	determiner	H
the	determiner	H
the	determiner	H
of	preposition	H
or	conjunction	H
in	preposition	H
have	auxiliary	H
they	pronoun	H
on	preposition	H
on	preposition	H
with	preposition	H
the	determiner	H
and	conjunction	H
to	preposition	H
may	auxiliary	H
is	auxiliary	H
to	preposition	H
and	conjunction	H
are	auxiliary	H
and	conjunction	H
does	auxiliary	H
in	preposition	H
and	conjunction	H

for	preposition	H
so	conjunction	H
have	auxiliary	H
the	determiner	H
of	preposition	H
a	determiner	H
in	preposition	H
and	determiner	H
or	conjunction	H
so	conjunction	H
they	pronoun	H
and	conjunction	H
the	conjunction	H
being	auxiliary	H
they	pronoun	H
my	pronoun	H
have	auxiliary	H
as	conjunction	H
has	auxiliary	H
and	conjunction	H
with	preposition	H
and	conjunction	H
he	pronoun	H
and	conjunction	H
I	pronoun	H
was	auxiliary	H
it	pronoun	H
on	preposition	H
and	conjunction	H
we've	pronoun	H
from	preposition	H
to	preposition	H
at	preposition	H
and	conjunction	H
on	preposition	H
so	conjunction	H
my	pronoun	H
but	conjunction	H
and	conjunction	H
of	preposition	H
and	conjunction	H
in	preposition	H
the	determiner	H
and	conjunction	H
a	determiner	H
and	conjunction	H
we	pronoun	H
the	determiner	H



in	preposition	H
in	preposition	H
to	preposition	H
they	pronoun	H
they	pronoun	H
for	preposition	H
and	conjunction	H
isn't	auxiliary	H
it's	pronoun	H
the	determiner	H
a	determiner	H
is	auxiliary	H
a	determiner	H
was	auxiliary	H
or	conjunction	H
the	determiner	H
from	preposition	H
don't	auxiliary	H
to	preposition	H
and	conjunction	H
your	pronoun	H
the	determiner	H
is	auxiliary	H
that	conjunction	H
I	pronoun	H
to	preposition	H
so	conjunction	H
our	pronoun	H
of	preposition	H
of	preposition	H
is	auxiliary	H
so	conjunction	H
I'm	pronoun	H
this	pronoun	H
it's	pronoun	H
but	conjunction	H
as	conjunction	H
in	preposition	H
they	pronoun	H
from	preposition	H
to	preposition	H
in	preposition	H
their	pronoun	H
in	preposition	H
to	preposition	H
so	conjunction	H
and	conjunction	H
and	conjunction	H

and	conjunction	H
have	auxiliary	H
I	pronoun	H
well	interj	H
and	conjunction	H
which	pronoun	H
through	preposition	H
in	preposition	H
this	pronoun	H
the	determiner	H
to	preposition	H
the	determiner	H
are	auxiliary	H
to	preposition	H
so	conjunction	H
in	preposition	H
are	auxiliary	H
for	preposition	H
to	preposition	H
for	preposition	H
a	determiner	H
and	conjunction	H
so	conjunction	H
these	pronoun	H
to	preposition	H
and	conjunction	H
he	pronoun	H
to	preposition	H
he	pronoun	H
so	conjunction	H
they	pronoun	H
is	auxiliary	H
is	auxiliary	H
and	conjunction	H
a	determiner	H
on	preposition	H
to	preposition	H
my	pronoun	H
to	preposition	H
in	preposition	H
and	conjunction	H
my	pronoun	H
till	conjunction	H
do	auxiliary	H
these	pronoun	H
so	conjunction	H
are	auxiliary	H
till	conjunction	H

till	conjunction	H
do	auxiliary	H
for	preposition	H
if	conjunction	H
this	pronoun	H
for	preposition	H
I	pronoun	H
if	conjunction	H