

COURSE TITLE: BASIC PHONETICS AND ENGLISH PHONOLOGY

TOPIC: STRESS

UNIT LECTURER: Dr. Lillian Kemunto Omoke.

Introduction

- ▶ In our previous lesson, we looked at the syllable .
- ▶ We indicated that strong syllables are longer and produced with force.
- ▶ The production of such syllables give rise to stress.
- ▶ A basic feature of English pronunciation is the use of stress to increase the acoustic prominence of particular syllables:
- ▶ the stress falls on the first syllable in *Canada* , the second syllable in *agenda* , and so on.
- ▶ Because English vocabulary is so varied, with mixed Germanic and Latinate origins, the location of stress is sometimes unpredictable.
- ▶ Nonetheless, we know that syllable structure affects stress placement in a large number of cases.

Meaning of Stress

- ▶ In a sequence of syllables making up a word, one syllable is always more prominent than the others.
- ▶ This syllable involves more muscular effort in its production: it is louder, longer and shows more pitch variation than surrounding syllables.
- ▶ This prominent syllable is said to bear stress.
- ▶ In 'pa.rrot', the first syllable is more prominent than the second. Hence, it is stressed; the second one is unstressed.
- ▶ In ra.ccoon, on the other hand, it is the last syllable which is louder and longer than the first (i.e it bears stress) (Davenport & Hannahs, 2010).

- ▶ Prominence is produced by four main factors:
 - ▶ (i) loudness,
 - ▶ (ii) length,
 - ▶ (iii) pitch and
 - ▶ (iv) quality.
- ▶ Generally these four factors work together in combination, although syllables may sometimes be made prominent by means of only one or two of them.

Stress placement

- ▶ The position of a stressed syllable is usually stated with respect to the right edge.
- ▶ So, 'pa.rrot' is described as having penultimate stress.
- ▶ 'a.spa.ragus, is said to have antepenultimate stress.
- ▶ 'ra.ccoon' and 'ba.boon', with stress on the last syllable, are said to have final stress.
- ▶ Stress placement in English is sensitive to syllable 'weight', which is determined by the composition of its rhyme.

- ▶ Whereas the rhyme in a heavy syllable consists of a vowel plus at least one other element (a glide or a consonant),
- ▶ the rhyme in a light syllable consists of just a vowel or a syllabic consonant such as [ɹ] or [ŋ].
- ▶ Thus the syllables *bad* (vowel plus consonant) and *by* (vowel plus glide) are heavy, while the syllable *bee* is light.
- ▶ The basic stress rule for English verbs (ignoring suffixes, which have effects of their own) can be stated as follows

- ▶ Basic stress rule for English verbs with more than one syllable:
- ▶ Stress falls on the final syllable if it is heavy; otherwise, it falls on the second-to-last (penultimate) syllable.
- ▶ The following table presents some examples illustrating the effect of this rule.
- ▶ (Note: Stress in transcriptions is marked by the symbol ' at the beginning of the syllable.)

Stress placement on verbs

Final syllable is heavy (stress falls on that syllable)	Final syllable is light (stress falls on the penultimate syllable)
arrive /ə.'raɪv/	hurry /'hʌ.rɪ/
destroy /dɪ.'strɔɪ/	button /'bʌ.tən/
advise /əd.'vaɪz/	cancel /'kæ.n.səl/
insist /ɪn.'sɪst/	study /'stʌ.di/
consult /kən.'sʌlt/	carry /'kæ.rɪ/ or /'ke.rɪ/
allow /ə.'laʊ/	belittle /bi.'lɪ.tl/
interrupt /ɪn.tə.'rʌpt/	recover /rɪ.'kʌ.və/

From O'Grady, W. & Archibald, J. (2000). *Contemporary linguistics: An introduction*. Toronto: Pearson.

Stress placement on nouns

- ▶ The basic rule for nouns (once again ignoring suffixes) can be stated as follows.
- ▶ Basic stress rule for English nouns with more than one syllable:
- ▶ Stress falls on the second-to-last (penultimate) syllable.
- ▶ The effect of this rule can be seen in the pronunciation of words such as *English*, *city*, *kidney*, *elbow* , and *effort* , all of which have stress on the penultimate syllable.
- ▶ Its effects can also be seen in the contrasts between noun-verb pairs with stress on the second-to-last syllable in the case of nouns;
- ▶ and on the final syllable in the case of verbs.

Noun	Verb
A convert	to convert someone
A convict	to convict someone
A discount	to discount something
An increase	to increase something
A refill	to refill something
A permit	to permit something
A suspect	to suspect someone

- ▶ A further effect of syllable structure can be seen in nouns that are longer than two syllables.
- ▶ In such cases, we generally find stress on the second-to-last syllable if that syllable is heavy;
- ▶ otherwise, the stress falls on the third-to-last (antepenultimate) syllable.
- ▶ Exceptions to these generalizations include *result*, *giraffe*, *sardine*, *ballet*, and *Tennessee* , all of which have stress on the final syllable, as well as *banana*,, and *committee* ,
- ▶ with stress on a light second-to-last syllable.

Stress in English nouns longer than two syllables

Penultimate syllable is heavy (stress on penultimate syllable)	Penultimate syllable is light (stress on antepenultimate syllable)
horizon /hə.'raɪ.zən/	Canada /'kæ.nə.də/
vacation /və.'keɪ.ʃən/	citizen /'sɪ.tə.zən/
aroma /ə.'rəʊ.mə/	cinema /'sɪ.nə.mə/
potato /pə.'teɪ.tə/	America /ə.'mɛ.rɪ.kə/
veranda /və.'rændə/	analysis /ə.'næ.ləsəs/
agenda /ə.'dʒɛn.də/	arithmetic /ə.'rɪθ.mətɪk/

From O'Grady, W. & Archibald, J. (2000). *Contemporary linguistics: An introduction*. Toronto: Pearson.

LEVELS OF STRESS

- ▶ When looking at stress in words, we are looking at stress *within the word*.
- ▶ This means that we are looking at words as they are said in isolation which is rather artificial situation:
- ▶ We do not often say words in isolation apart from few words such as:
- ▶ ‘yes’, ‘no’, ‘possibly’, ‘please’ and interrogative words such as ‘what’, ‘who’, etc.
- ▶ However, looking at words in isolation does help us to see stress placement and stress levels more clearly than studying them in the context of continuous speech.

- ▶ Three levels of stress can be identified:
- ▶ Primary
- ▶ Secondary
- ▶ Unstressed

- ▶ Consider the word 'around' [ə'raʊnd], where the stress always falls clearly on the last syllable and the first syllable is weak.
- ▶ From the point of view of stress, the most important fact about the way we pronounce this word is that on the second syllable the pitch of the voice does not remain level;
- ▶ but usually falls from a higher to a lower pitch.
- ▶ The prominence that results from this pitch movement, or tone, gives the strongest type of stress; this is called **primary stress**.

- ▶ In some words, we can observe a type of stress that is weaker than primary stress but stronger than the first syllable of ‘around’
- ▶ Consider the words ‘photographic’ [ˌfəʊtəˈgræfɪk] and anthropology [ˌænθrəˈpɒlədʒɪ] drawn from Roach (2009).
- ▶ The stress in these words is called **secondary stress**.
- ▶ It is usually represented in transcription with a low mark [ˌ]
- ▶ Having identified two levels of stress, we may also indicate that there is a third level which can be called unstressed and is regarded as being the absence of any recognizable amount of prominence

Sentence stress

- ▶ Stress in the isolated word is termed **word stress** as we have already **determined**.
- ▶ But we can also analyze stress in connected speech, termed **sentence stress**, where both polysyllables and **monosyllables** (single-syllable words) can carry strong stress while other words may be completely unstressed.
- ▶ The words most likely to receive sentence stress are those termed **content words** (also called ‘lexical words’):
 - ▶ nouns, adjectives, adverbs and main verbs.
 - ▶ These are the words that normally carry a high information load.
- ▶ We can contrast these with **function words** (also called ‘grammar words’ or ‘form words’), namely:
 - ▶ determiners (e.g. *the, a*), conjunctions (e.g. *and, but*), pronouns (e.g. *she, them*), prepositions (e.g. *at, from*), auxiliary verbs (e.g. *do, be, can*).

- ▶ Function words carry relatively little information; their role is holding the sentence together.
- ▶ If we compare language to a brick wall, then content words are like ‘bricks of information’ while function words act like ‘grammatical cement’ keeping the whole structure intact .
- ▶ Unlike content words, function words for the most part carry little or no stress.
- ▶ Only two types of function words are regularly stressed: the demonstratives (e.g. *this*, *that*, *those*) and *wh*-interrogatives (e.g. *where*, *who*, *which*, *how*).
- ▶ Note, however, that when *wh*-words and *that* are used as relatives they are unstressed, e.g. *the girl who lent me the yellow hat that I wore to your wedding*.

- ▶ In the following English sentences, spoken with normal delivery, the most prominent syllable of all is the head syllable of the final foot.
- ▶ (i.e. foot is a phonological structure consisting of a stressed syllable and - also known as the head- plus any associated unstressed syllables).
- ▶ He likes watching **football**
- ▶ United were **winning**
- ▶ She was out last **night**
- ▶ The group all left **together**

- ▶ However, in these larger structures, the position of stress is much less fixed than for individual words.
- ▶ The most prominent syllable may be in some other position in the sentence, to indicate contrast, for example,
- ▶ He likes **watching** football (but not playing it).
- ▶ **United** were winning (but City were losing).
- ▶ Similarly, stress may be moved for emphasis:
- ▶ She **was** out last night (definitely)
- ▶ The group **all** left together (every last one of them)

Syllable-based phonology

- ▶ The aspect of stressed syllable can be applied in a number of aspects.
- ▶ The stress placed on syllables can be felt prominently when analyzing the following:
 - ▶ Aspiration in English(especially as is applied to voiceless stops)
 - ▶ Vowel length in English-
 - ▶ Remember that stressed syllables are longer; unstressed ones are shorter.

Aspiration in English

- ▶ We have already seen that the English voiceless stops /p, t, k/ can be aspirated, as in *pan* [p^hæŋ], *tan* [t^hæŋ], and *kin* [k^hɪn].
- ▶ But what are the precise conditions under which the aspirated allophone is used?

A (aspiration)		B (no aspiration)		C (no aspiration)	
[p ^h æŋ]	<i>pan</i>	[spæŋ]	<i>span</i>	[slæp]	<i>slap</i>
[t ^h æŋ]	<i>tan</i>	[stæŋ]	<i>Stan</i>	[slat]	<i>slot</i>
[k ^h ɪn]	<i>kin</i>	[skɪn]	<i>skin</i>	[sɪk]	<i>sick</i>
[p ^h ɹæŋ]	<i>plan</i>	[splɪt]	<i>split</i>		
[t ^h ɹaj]	<i>try</i>	[strɒŋ]	<i>strong</i>		
[k ^h ɪŋ]	<i>clean</i>	[skrɪm]	<i>scream</i>		

From O'Grady, W. & Archibald, J. (2000). *Contemporary linguistics: An introduction*. Toronto: Pearson.

- ▶ A preliminary generalization can be stated very simply with reference to syllable structure.
- ▶ English voiceless stops are aspirated syllable-initially.
- ▶ This statement accounts for all the data in column A of table given above:
- ▶ where voiceless stops appear syllable-initially.
- ▶ No aspiration is found in the words in columns B and C since the voiceless stops appear either as the second segment in a syllable onset (in *span* , *skin* , etc.), or in a coda, as in *slap* and *slot* .

- ▶ But when we look *inside* words, aspiration is more puzzling—the syllable-initial voiceless stops in column A of the table below are aspirated but those in column B are not.

A (aspiration)		B (little or no aspiration)	
<i>upon</i>	[ə.'pʰaŋ]	<i>upper</i>	['ʌ.pə]
<i>atomic</i>	[ə.'tʰɑ.mɪk]	<i>atom</i>	['æ.təm] or ['æ.rəm]
<i>attack</i>	[ə.'tʰæk]	<i>attic</i>	['æ.tɪk] or ['æ.rɪk]
<i>akin</i>	[ə.'kʰɪn]	<i>aching</i>	['eɪ.kɪŋ]

From O'Grady, W. & Archibald, J. (2000). *Contemporary linguistics: An introduction*. Toronto: Pearson.

- ▶ We can make sense of this if we take into account the fact that syllables can be stressed or unstressed.
- ▶ (Recall that a stressed syllable is perceived to be more prominent than its neighbours—compare *phoneme* , with stress on the first syllable, with *phonemic* , which has stress on the second syllable.)
- ▶ Notice that the aspirated stops in table above, all occur at the beginning of a stressed syllable, marked here by the diacritic ['].
- ▶ Stress seems not to matter when the voiceless stop is at the beginning of a word—the /p/ of *police* [p^hə.'lis] and *parade* [p^hə.'reɪd] is aspirated even though the initial syllable is unstressed.

- ▶ But it does matter when the syllable occurs inside the word.
- ▶ The right generalization seems to be something like this:
- ▶ English voiceless stops are aspirated when they occur at the beginning of a syllable that is word-initial or that is stressed.

Vowel length in English

- ▶ Vowel length in English offers yet another example of the phonological relevance of syllables.
- ▶ We have already seen that, as a first approximation, vowels are lengthened in front of a voiced obstruent in English, but not elsewhere.

A (vowel lengthening)		B (no vowel lengthening)	
<i>bad</i>	[bæ:d]	<i>bat</i>	[bæt]
<i>Abe</i>	[e:jb]	<i>ape</i>	[ejp]
<i>phase</i>	[fe:z]	<i>face</i>	[fejs]
<i>leave</i>	[li:v]	<i>leaf</i>	[lif]
<i>tag</i>	[t ^h æ:g]	<i>tack</i>	[t ^h æk]
<i>brogue</i>	[bro:wɟ]	<i>broke</i>	[browk]
		<i>say</i>	[sej]
		<i>meal</i>	[mil]
		<i>soar</i>	[sor]
		<i>show</i>	[ʃow]

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- ▶ It turns out, though, that this is not quite right: lengthening takes place only if the voiced obstruent is in the coda position of *the same syllable* as the vowel.
- ▶ As the next examples show, if the consonant is in the onset of the next syllable, the vowel is not lengthened.
- ▶ Once again, syllable structure is crucial.
- ▶ English vowels are lengthened when followed by a voiced obstruent in the coda position of the same syllable.

<i>obey</i>	[ow.bej]	(compare to <i>lobe</i> [lo:wb])
<i>redo</i>	[ri.du]	(compare to <i>read</i> [ri:d])
<i>regard</i>	[ri.gard]	(compare to <i>league</i> [li:g])
<i>ogre</i>	[ow.gə]	(compare to <i>brogue</i> [bro:wɟ])
<i>Odin</i>	[ow.din]	(compare to <i>ode</i> [o:wd])

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Functions of stress in English

- ▶ i. differentiating function:
- ▶ **This means it distinguishes between words:**
- ▶ Consider the words ‘insult’, ‘compound’ ‘invalid’
- ▶ Each of these have different readings depending on the position of the main stress.
- ▶ Noun- an **insult**, a **compound** - the first syllable is stressed
- ▶ Verb- to **insult**, to **compound** - the second syllable is stressed

- ▶ The third word is either a noun ‘invalid’ with antepenultimate stress or an adjective ‘invalid’ with penultimate stress.
- ▶ Such pairs of words, which are identical except for one component of their make-up, in this case stress, are known as **minimal pairs**.
- ▶ We saw that minimal pair can include such words as ‘dig’ and ‘pig’; ‘pin’ and ‘kin’
- ▶ **2. stress can also be used to mark contrast as in:**
- ▶ I said a **big** farm; not a **pig** farm.
- ▶ **3. it is used to indicate emphasis as in:**
- ▶ He ran all the way to the pub.

References

- ▶ Davenport, M. & Hannahs, S.J (2010). *Introducing phonetics and phonology*. London: Routledge.
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