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## Audibility and Acoustic Cues

- Many speech perception studies carried out in ideal conditions.
- Many reasons for degradation of conditions in the real world:

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## Reasons for degradation of speech

- Loss of frequency components of signal
- Addition of non-speech background noise
- Addition of competing talkers
- Reverberation
- Distortion by processing devices
- Distortion by damaged ears
- Non-fluent speakers
- ...

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## British English Consonants

- 24 British English consonants
  - Occur singly in syllables: e.g. /hæt/ - /h/ and /t/ occur on their own separated by /æ/
  - Occur in pairs within a consonant cluster: e.g. /hæts/ where /ts/ is a two phoneme consonant cluster
  - Very occasionally occur in three phoneme consonant clusters: e.g. /ndl/ as in /hændl/ (“handle”)
  - Where the cluster is at the end of a syllable four consonants can occur together (usually as plurals or possessives) e.g. /ndls/ as in /hændls/ (“handles”)

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- Low frequency parts of speech are less important than higher frequencies

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## Confusion matrices

response

positives

stimulus

positives

		/p/	/t/	/k/
/p/	240	41		
/t/	1	252	1	
/k/	18	3	219	

240 /p/ stimuli correctly labelled

41 /p/ stimuli labelled as /k/

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## +12 dB S:N ratio

Place errors

Manner errors

Voicing errors

Table VI

S:N ratio: +12 dB

200 Hz

400 Hz

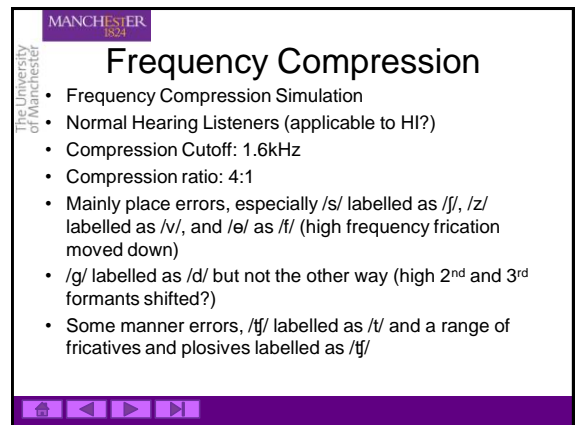
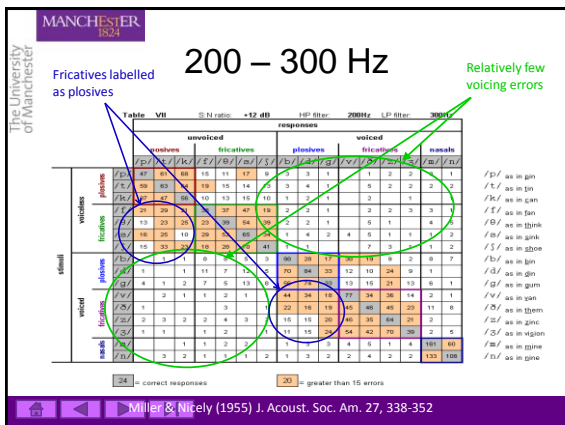
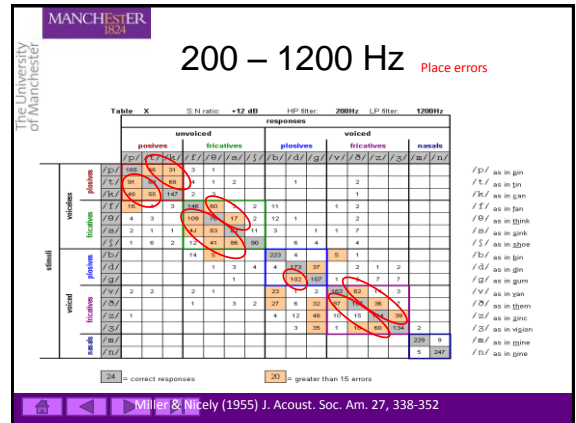
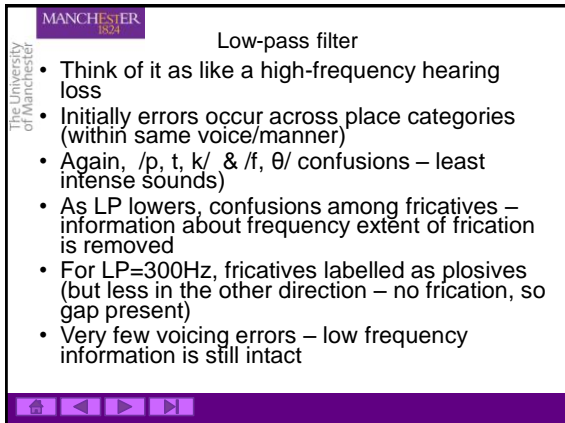
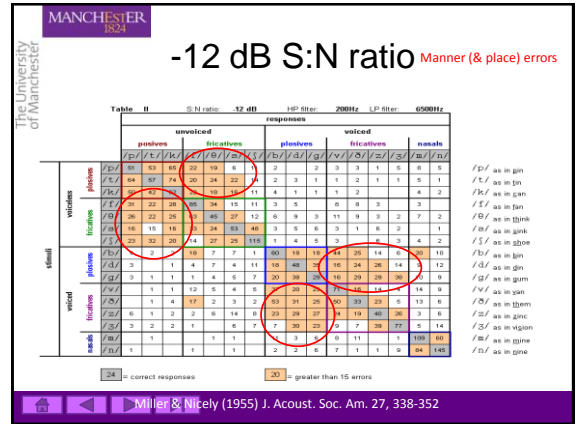
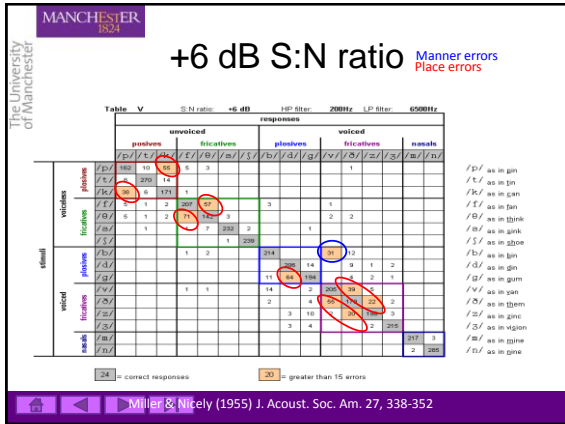
800 Hz

		response			
		unvoiced	voiced	fricatives	nasals
voiced	g	280	1	1	
	b	1	282	1	
	d	18	3	219	
	t	1	252	1	
	n	1	1	1	278
	s	1	1	1	278
unvoiced	p	240	41		
	t	1	252	1	
	k	18	3	219	
	f	1	1	1	278
	s	1	1	1	278
	z	1	1	1	278
fricatives	f	1	1	1	278
	s	1	1	1	278
	z	1	1	1	278
	ʃ	1	1	1	278
	ʒ	1	1	1	278
	h	1	1	1	278
nasals	m	1	1	1	278
	n	1	1	1	278
	ɲ	1	1	1	278
	ŋ	1	1	1	278
	l	1	1	1	278
	r	1	1	1	278

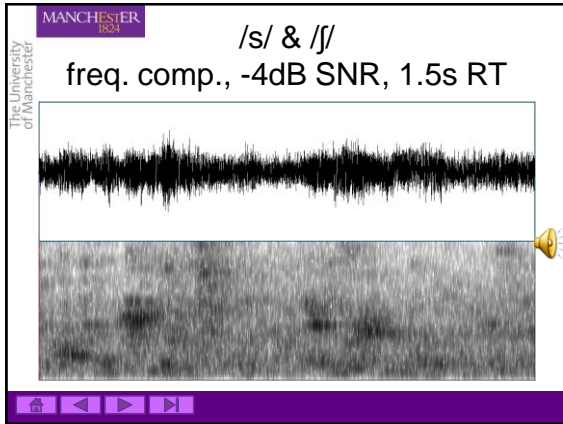
240 - correct responses

41 - greater than 15 errors

Miller & Nicely (1955) J. Acoust. Soc. Am. 27, 338-352







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