University of Manchester:

- Dr <u>Ian Brown</u>, School of Nursing;
- Dr <u>Susan Rutherford</u>, Department of Music;
- Dr <u>Tim Wilding</u>, Audiology & Deafness Research;
- Dr <u>Jo Hart</u>, Manchester Medical School.

University of Salford:

- Dr <u>Bill Davies</u>, Acoustics Research Centre.

Voice and Information

- Content — information conveyed through linguistic means;

- Paralinguistic or 'communicative musicality' features, comprising pitch, tone, rhythm, volume — information about speaker's intentions, mood, identity, personality;

- Inter-relationship between verbal content and paralinguistic features.

Voice quality

Qualities associated with 'vocal attractiveness' and thus enhancing speech intelligibility and listener's reception:

- 'good articulation, low shrillness, low nasality, moderate pitch and pitch range, and good resonance'

Jody Kreiman and Diana Sidtis, 'Perception of Emotion and Personality from Voice', *Foundations of Voice Studies: An Interdisciplinary Approach to Voice Production and Perception* (Wiley-Blackwell, 2011), 348.

Literature review:
Four distinct vocal styles ….?

- Conversational

- Lombard

- 'Elderspeak'

- Clear speech

Conversational

Typical where speaker believes listener hears well and is familiar with voice and no noise:

- Faster pace

- Narrower pitch range (or fundamental frequencies [F0])

- Reduced formant (acoustic resonance or 'spectral peaks')

- More unreleased consonant bursts (plosions)

- Lower temporal modulation (rhythmic variation)

- Reduced vowel space

Lombard (1909)

Instinctive response to noisy environments:

- Reduced speaking pace
- Increased pitch and volume
- Formant shifts to create more resonance
- Lengthening of vowels
- Vowel to consonant energy redistribution
- Increased vocal effort
- Increased facial expressivity

Martin Cooke & Maria Lecumberri, 'The Intelligibility of Lombard Speech for Non-Native Listeners', *Journal of the Acoustical Society of America,* 132 (2012), 2: 1120-1129

'Elderspeak'

An intergenerational communication style common (?) in some healthcare settings:

- Simplistic vocabulary and grammar, shortened sentences
- Slowed speech
- Exaggerated intonation
- Elevated pitch and volume
- Greater repetition
- Inappropriate terms of endearment
- Overly directive or overbearing talk

Kristine N. Williams, 'Elderspeak in Institutional Care for Older Adults', in *Communication in Elderly Care*, ed. Peter Backhaus (Continuum, 2011), 1-19.

Examples

Clear speech

Response where speaker believes listener has trouble with hearing and speech intelligibility:

- Decreased speaking rate

- Longer vowels and pauses

- Expanded vowel space

- Increased consonant energy and articulation

- Increased energy at higher frequencies

- Increased pitch and modulation

Scarborough & Zellou, 'Clarity in Communication: "Clear" Speech Authenticity and Lexical Neighborhood Density Effects in Speech Production and Perception', *Journal of the Acoustical Society of America,* 134 (2013), 5: 3793-3807

Example of clear speech

'Clear' speech

- Improves intelligibility by up to 26% for hearing-impaired listeners (Payton *et al*)

K.L. Payton *et al*, 'Intelligibility of Conversational and Clear Speech in Noise and Reverberation for Listeners with Normal and Impaired Hearing', *Journal of the Acoustical Society of America,* 95 (1994), 3: 1581-92

'What makes clear speech clear?'

- Insufficient data — small size of some studies (Caissie et al)
- differences in responses between normal-hearing and hearing-impaired listeners;
- 'certain clear speech acoustic characteristics that enhance intelligibility for normal-hearing listeners may have no effect on or be detrimental to intelligibility for hearing-impaired listeners' (Ferguson)

Rachel Caissie *et al*, 'Clear Speech for Adults with a Hearing Loss: Does Intervention with Communication Partners Make a Difference?', *Journal of the American Academy of Audiology*, 16 (2005), 157-71.

Sarah Ferguson, 'Talker Differences in Clear and Conversational Speech: Vowel Intelligibility for Normal-hearing Listeners', *Journal of the Acoustical Society of America,* 116 (2004), 4: 2365-2373

Developing Voice and Speech Habits

- Recent studies on voice training for teachers demonstrated that although improvement could be achieved during sessions, it was rarely sustained in the months following training;

- High drop-out rates from training sessions were also recorded in some studies.

Pizolato *et al*, 'Evaluation of the Effectiveness of a Program of Voice Training for Teachers', *Journal of Voice*, 27 (2013), 5: 603-10.

Different approaches

- Avelina Aquino, *Speech and Oral Communication for Nursing* (Quezon City: Rex Publishing, 2008)