Entendre le vieillissement langagier: études longitudinales de profils prosodiques
(Hearing the Speech of Older People: Longitudinal Studies of Prosodic Profiles)

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Brief State of the Art

The Aging Voice

Studies have been focusing on normal ageing in different aspects of speech and many highlight physiological aspects: regarding the voice, there are changes in phonatory and articulatory systems. These changes affect the oral cavity, the pulmonary function, and the laryngeal function (Ramig & Ringel 1983, Ryan & Burk 1974). Here is a brief summary of what happens to prosody with increasing age:

- Tempo: slower speech rate. Its perception is affected (fast speech rate is not easily processed by elderly subjects).
- Increased breathiness.
- F_0 and Intonation: pitch (mean fundamental frequency) seems to increase for males and decrease for females.
- Voice quality: jitter and shimmer (increased pertubation of the acoustic voice signal) thus, a rougher voice.
- Less able to sustain prolonged vowels.
- Reduced maximal vocal intensity.
- Greater use of prosody to compensate perceptual failures (compensation).
- More and longer pauses.

(Moyse 2014, Ptacek & Sander 1966, Ryan & Burk 1974, Hollien 1987, Linville 2001, Mimematsu et al. 2002, Zeller-Keller, Ringel & Chodzko-Zajko 1987, Verdonck- de Leeuw & Mahieu 2004, Baken 2005, Colman Machado de Machado et al. 2016, Martins & Andrade 2011)

The Perception of Age

It sounds reasonnable to consider that the previously mentioned changes affect the apparent age and, consequently, also the perception of it. But the first question we need to answer before analyzing the perception of speech of older people is "Can people properly estimate the age if they base their judgement on speech?"
The answer is yes : "From a large number of previous studies concerning perception of speaker-age, we have learned that (1) human listeners are fairly good at estimating the age of an unknown (and unseen) speaker, (2) perceptual clues to speaker age include variation of pitch, speech rate, voice quality, articulation, phrasing, and (3) several non-phonetic factors influence listener's judgements." (Schötz 2006 : 46)
For a long time linguistics studies have focused on F_0, now they are investigating further tempo and spectral features (Schötz 2004).

The Research Project

The thesis will consist in two main facets : firstly, a precise description of the longitudinal evolution of prosody in older people's speech (small-scale study) and, secondly, its perception by ordinary listeners (who have not studied linguistics).
While the small-scale study will firstly focus on carefully chosen prosodic parameters (cf. "Question & Hypotheses"), the perception survey will answer the following questions : what do laymen take into account when they have to assess the speech of the elderly? What happens when they have to evaluate the same speaker at different stages of his/her life? What do they consider to be a clue of an older speaker's speech?

Question & Hypotheses

The research question formulated in the early stages of the thesis is: How do older people speak and how is their speech perceived by non-linguist listeners?
For the small-scale longitudinal aspects, the research will firstly focus on pauses (number and position), tempo and intonation (F_0). However, the data-driven approach will be favoured.
For now, we have three major hypotheses that will guide the first steps of our research:

- The number of pauses will not necessarily increase but their position and function will change over time.
- The rate of speech will decrease over time.
- The F_0 will decrease over time.

Small-Scale Study

Perception Survey

Better Understanding of the Prosody of Older People
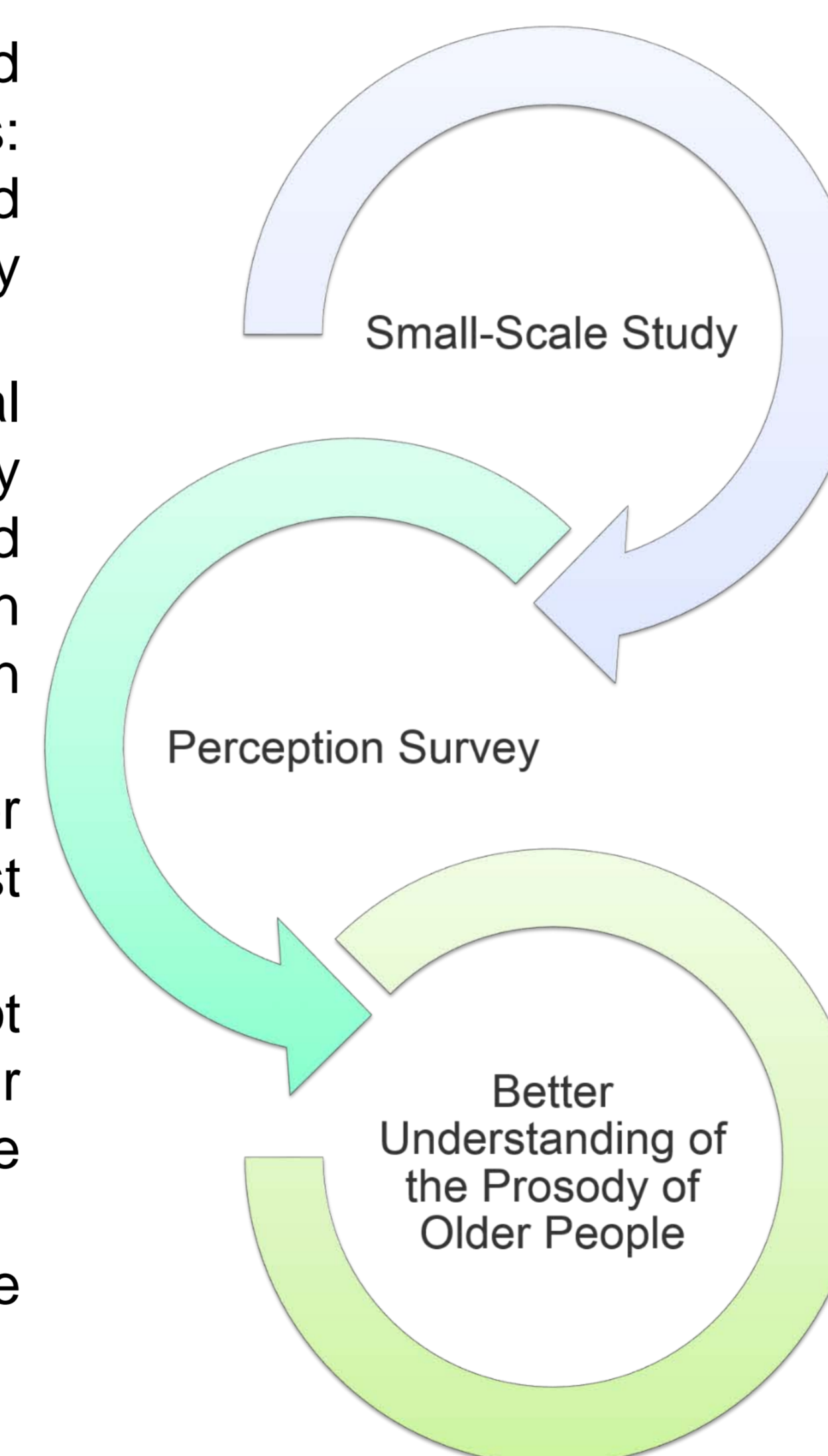
The Data

The corpus is extracted from the LangAge corpus. Composed of 15 interviews realised in 2005, 2012 and 2015, it will serve both phases of the project.
As illustrated below, the subsample extracted from the corpus will focus on five women whose age (at the time of the first interviews) is between 72 and 86. The good control of the social parameters allows us to focus on the age of women in question.

The Sampling

Taking into consideration the depth of the planned analysis, only smaller samples will be investigated. For the small scale study, five minutes from each of the 15 interviews will be analysed (thus, 75 min). They will be transcribed in Praat following a modified version of the convention used for the LangAge corpora and inspired by several other projects such as CorpAGEst or CIEL-F.

	Jeanne	Paule	Denise	Odette	Simone
Age (1st interview)	72	74	78	84	86
(Level of) Education	Secondary school (~16y)	Secondary school (~16y)	Secondary school (~16y)	Secondary school (~16y)	Secondary school (~16y)
Civil Status	Married	Married	Married	Widow	Married
(Former) Socio-prof. level	Employee	Employee	Employee	Employee	Employee

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