

ACOUSTIC AND PERCEPTUAL CHANGES IN ACTOR STUDENTS' VOICES AFTER 16 MONTHS OF TRAINING

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This pilot study evaluates the perceptual and acoustic changes in normal or supranormal voices after participation in Linklater-based voice training. Eleven students in an M.A. acting program were assessed two times during a period of 16 months. An unrehearsed reading of a performance piece was recorded in habitual loudness. Voice Range Profile (VRP) was also registered. Five Finnish voice trainers, experienced in working with healthy professional voice users, assessed the recorded reading task in randomized order. The evaluation was made twice: first describing voice quality and characteristics freely, and secondly with a structured questionnaire using a 10 cm visual analogue scale. Several voice characteristics were evaluated: *overall voice quality*, *audibility*, *type of voice production (hypofunctional – hyperfunctional)*, *resonance (dark – bright; degree of sonority)*, *overall pitch*, *pitch range*, and *clarity of articulation (consonants, vowels)*. The reading samples were analyzed acoustically for the fundamental frequency (F0) (mean, range, SD) and spectral structure (the level difference between the first formant region and F0 region, L1-L0, and Alpha, level difference above and below 1500 Hz). Pearson's correlations were made between acoustic and perceptual variables. Changes in frequency range and dynamic range were measured from VRP. The inter-rater reliability (Gronbach's Alpha) was 0,86 at its maximum. The paired t-test showed a significantly greater perceived pitch range ($p=0.003$) and a shift toward less hyperfunctional voice use ($p=0.022$). Voice timbre showed a tendency toward darker ($p=0.053$). The voices which were assessed as becoming darker and more sonorous, and having better overall quality, were described as having become more freely produced, more balanced, and more expressive. Acoustic data from the reading samples didn't show significant changes other than of a higher maximum pitch ($p=0,024$) and a tendency for a wider standard deviation of F0 ($p=0,057$). F0 correlated significantly with perceived voice production ($p=0,006$) and voice timbre ($p=0,038$) indicating that lower pitch was connected to voices that were evaluated as less hyperfunctional and of darker color. VRP showed significant increase in frequency range ($p=0,001$) and lower minimum intensity ($p=0,024$) and greater maximum intensity ($p=0,024$). Although the sample size was small, the study shows tentative positive results. Lessened hyperfunction, slightly lower pitch and a darker timbre may indicate easier, less tight phonation. Increase in the reading pitch range and VRP suggest increased flexibility of voice use, which are also goals of Linklater Voice Training. Individual differences were observed, and it must be noted that participants may have dissimilar training goals which also affect the quantitative data.