

ACOUSTICS2008/1857
Critical-band compression method of speech enhancement for elderly people: Investigation of syllable and word intelligibility

Keiichi Yasu^a, Hideki Ishida^a, Ryosuke Takahashi^a, Takayuki Arai^b, Kei Kobayashi^a and Mitsuko Shindo^c

^aDept. of Electrical and Electronics Engineering, Sophia University, 7-1 Kiyoi-cho, Chiyoda-ku, 102-8554 Tokyo, Japan

^bDept. of Information and Communication Sciences, Sophia University, 7-1 Kiyoi-cho, Chiyoda-ku, 102-8554 Tokyo, Japan

^cSophia Univ. Research Center for Communication Disorders, 7-1 Kiyoi-cho, Chiyoda-ku, 102-8554 Tokyo, Japan

Auditory filters for the hearing impaired tend to be wider than those of normal hearing people. Thus, the frequency selectivity decreases because of increased masking effects [Glasberg and Moore, *J. Acoust. Soc. Am.*, 79(4), 1020-1033, 1986]. We have developed a method, called "critical-band compression," in which the critical band is compressed along the frequency axis [Yasu et al., *Handbook of the International Hearing Aid Research Conference (IHCON)*, 55, Lake Tahoe, 2004]. We investigated whether our method improves syllable and word intelligibility. Thirty one elderly people participated in experiments. First, we measured the auditory filter bandwidth using a notched noise method [Patterson, *J. Acoust. Soc. Am.*, 59(3), 640-654, 1976]. Second, we conducted syllable and word intelligibility tests. The compression rates of critical-band compression were set to 0% for the original, and 25%, 50%, and 75%. The results were that the percentages of correct responses were almost the same at 0%, 25% and 50% compression rates for syllable and word intelligibility. A significant correlation was not obtained between the compression rate of processing and the auditory filter bandwidth. [Work supported by JSPS.KAKENHI (16203041) and Sophia University Open Research Center from MEXT.]