

ANNOYANCE SCALES IN CHINESE, KOREAN AND VIETNAMESE

T. Yano¹ and H. Ma¹
Kumamoto University, Japan

Introduction Internationally standardized annoyance scales are required in comparing community responses to environmental noises measured in various linguistic regions. ICBEN Team 6 organized an international joint study to establish standardized noise annoyance scales and has developed scales and questions in nine linguistic regions [1]. With the exception of Japan, all of these regions were Euro-American. Thus, it has been necessary to augment the original ICBEN study by utilizing the ICBEN method to construct noise annoyance scales for use in other Asian countries. The present study reports on the use of the ICBEN method to construct annoyance scales in Chinese, Korean and Vietnamese.

Method The ICBEN method consists of the following four procedures: 1) selection of 21 modifiers describing various degrees of annoyance in each linguistic region; 2) classification of the modifiers into a maximum of nine categories; 3) construction of 5- and 4-point scales by selecting suitable modifiers from the pool of 21; and 4) intensity evaluation through a line-marking exercise on a 10 cm line segment. Table 1 shows the 21 English modifiers used in the ICBEN study and the pools of modifiers in the three languages that were selected for use in this study. The modifiers were selected by the authors in consultation with noise annoyance researchers in the linguistic regions and researchers familiar with Japanese and one of the other languages. The numbers of subjects for Chinese, Korean and Vietnamese were 474, 408 and 193, respectively.

Table 1 The 21 modifiers in Chinese, Korean and Vietnamese

| No. | English | Chinese | Korean | Vietnamese |
|-----|-------------------------------|---------------------------------------|--------------------------------|---------------------------------------|
| 1 | <u>Not at all (NA)</u> | <u>Yi dian ye bu (YB)</u> | <u>Junhyia (JH)</u> | <u>Hoan toan khong on (HT)</u> |
| 2 | Insignificantly (IF) | Bu (BU) | Gudaji (GD) | On mot chut (MC) |
| 3 | Barely (BA) | Ji hu bu (JB) | Byialro (BR) | On chut it (OI) |
| 4 | Hardly (HA) | You yi dian dian (YY) | Gurokke (GR) | Tuong doi khong on (TK) |
| 5 | A little (AL) | Bu zen me (BM) | <u>Jogum (JG)</u> | It on (IO) |
| 6 | <u>Slightly (SL)</u> | Shao wei you dian (SW) | Jom (JO) | On chut xiu (OX) |
| 7 | Partially (PA) | <u>Hao xiang you dian (HD)</u> | Yakkan (YG) | <u>On mot phan nao (PN)</u> |
| 8 | Somewhat (SW) | Bu hen (BH) | Daso (DS) | Khong den noi on (KN) |
| 9 | Fairly (FY) | You dian (YD) | Bigyojiac (BG) | On phan nao (OP) |
| 10 | <u>Moderately (MO)</u> | You xie (YX) | <u>Jebupp (JB)</u> | Khong on lam (KL) |
| 11 | Rather (RA) | <u>Bi jiao (BJ)</u> | Kkue (KO) | On it nhieu (IN) |
| 12 | Importantly (IM) | Shi zai you dian (SD) | Yunanhi (YN) | Hoi on (HO) |
| 13 | Considerably (CN) | Man (MN) | Tukki (TH) | <u>Khong qua on (KQ)</u> |
| 14 | Substantially (SU) | Hao (HO) | <u>Meu (MW)</u> | Kha on (KO) |
| 15 | Significantly (SI) | <u>Xiang dang (XD)</u> | Jungmal (JM) | Tuong doi on (TO) |
| 16 | <u>Very (VY)</u> | Hen (HN) | Noumu (NM) | Hoi qua on (HQ) |
| 17 | Highly (HY) | Shi fen (SF) | Aju (AJ) | <u>On nhieu (ON)</u> |
| 18 | Strongly (SY) | Shi zai hen (SH) | Moppsi (MS) | Qua on (QO) |
| 19 | Severely (SE) | Tai (TI) | Dedanhi (DD) | Rat on (RO) |
| 20 | Tremendously (TR) | Fei chang (FC) | Gyuengianghi (GJ) | On lam (OL) |
| 21 | <u>Extremely (EX)</u> | <u>Te bie (TB)</u> | <u>Umchungnage (UC)</u> | <u>Cuc on (CO)</u> |

Results Figure 1 shows the intensity scores of the 21 modifiers on the line-marking exercises in Chinese, Korean and Vietnamese. The modifiers underlined in Table 1 were selected for use in the 5-point scales in each of the languages according to the following three criteria: 1) intensity difference score (I-C Delta), i.e., the difference between the modifier's mean and the scale point's ideal intensity score (0, 25, 50, 75 or 100); 2) net preference score (P%), i.e., the net number of selections of the modifier for a particular scale point (the number of selections for the scale point minus the number of selections for less popular scale points) divided by the total number of subjects; and 3) standard deviation of intensity scores (StD), i.e., the standard deviation of the intensity scores for each modifier.

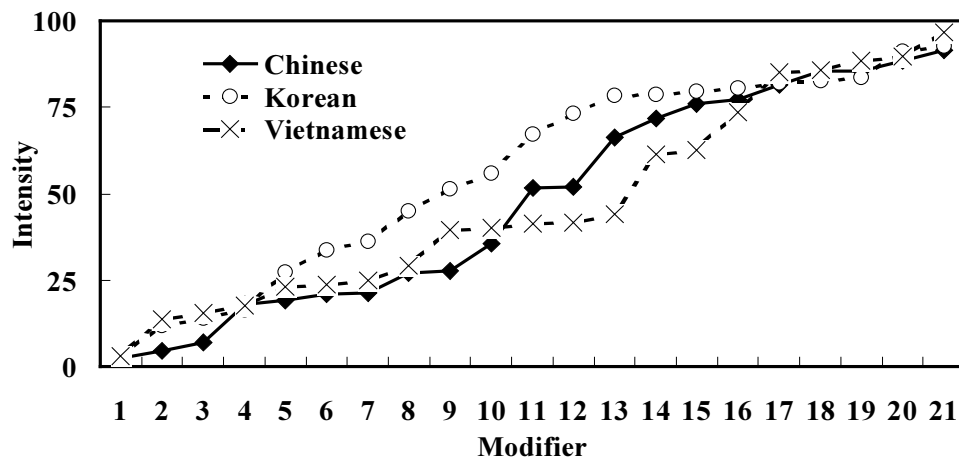


Figure 1 Intensity of 21 modifiers in three languages

Comments Noise annoyance scales in three Asian countries were constructed using a sufficient number of subjects. In this century, noise pollution will be an important and serious environmental problem in Asian countries. Now a frame has been established to conduct social surveys on community responses to environmental noises and to offer internationally comparable data from East Asia. This study was financially supported by the Japan Securities Scholarship Foundation and the Heiwa Nakajima Foundation. The authors appreciate the following researchers for their collaboration: Y. C. He, H. Gao, G. R. Jiang, C. M. Chiang, X. T. Liu, B. K. Wang, S. L. Wen, and Q. Y. Zhang for Chinese; J. Y. Joen and D. Kim for Korean; T. Nishimura, N. T. Hang, P. N. Dang and P. D. Lan for Vietnamese.

Keywords: noise annoyance scale, ICBEN method, Chinese, Korean and Vietnamese

Reference [1] J.M. Fields et al, J. Sound Vib., 242(4), pp641-679 (2001).