

STRESS EVALUATION USING VOICE EMOTION RECOGNITION TECHNOLOGY: a novel stress evaluation technology for disaster

responders.

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Objectives

For disaster responders who work in a high stress environment, mental health support and stress management is an important issue. Self-administered questionnaire is used to screen for stress in general. However, questionnaire is not able to be excluded reporting bias, which means that registrant changes the nuance of answers consciously. Additionally, when screening a large number of subjects in the field of disaster, inspection simple and rapid method is needed. Recently, the technology of emotion recognition has been developed rapidly and highly. Therefore, in order to overcome them, we have developed a software stress evaluation using speech emotion recognition technology.

Methods

The subject is 1004 soldiers dispatched to the Great East Japan Earthquake and 444 soldiers to do a routine mission in Japan Ground Self Defense Forces. All of them had taken the stress analysis by voice and psychological testing by questionnaire. The evaluation by interviewing was carried out for 225 soldiers who showed an abnormal psychological testing, and obtained the consent.

We used “Sensibility technology ST Emotion” (AGI Japan Inc.) for emotion voice analysis system. This system determines emotional elements as including anger, joy, sorrow, and calmness. It also measures feeling of excitement and mood of depression. To evaluate the performance of the program, we compared with the psychological test (GHQ-30) or interviews.

Results

29 soldiers in 225 were diagnosed to need medical intervention or counseling. GHQ-30 detected 27 of them and its sensitivity was 0.931. Voice analysis detected 26 of them and its sensitivity was 0.897.

Conclusions

The sensitivity of stress evaluation by voice was similar to that of the GHQ-30. Additionally, the reporting bias was not observed in it.