Short Communication

PSYCHOMETRIC PROPERTIES OF THE CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE OF JAPANESE WORKERS

Key words: Center for Epidemiologic Studies Depression Scale; factor analysis; internal consistent reliability; Japanese worker

Recent epidemiologic studies have shown depressive disorders to be most common among the mental disorders in the community. As self-rating depression scales, the Center for Epidemiologic Studies Depression Scale (CES-D) has been widely applied to population surveys in the United States (U.S.). The scale is so brief that it can be administered in a few minutes and is easy to score. Thus, it is easy to apply to both epidemiologic community surveys and occupational studies.

As with other self-rating psychiatric scales, studies on the psychometric properties including factor-analytic study of the CES-D have been carried out on U.S. population. However, such study on the Japanese version CES-D has not been performed. In this study the authors therefore examined these issues based on the data of Japanese workers.

Materials and Methods

All of the 2,190 workers in a public institution in Hokkaido were asked to complete the Japanese version CES-D and other questions in September 1986. The completed data were obtained from 2,016 subjects (92.1%; males: N=1,870, females: N=142, with sex not specified: N=4). Cronbach’s alpha coefficient was calculated. A principal component analysis with varimax rotation was carried out.

Results and Discussion

The alpha coefficients of the CES-D were 0.79 for males and 0.78 for females. The values in the case when individual item was deleted were almost equal to those of the whole items with the values ranging from 0.76 to 0.80 for males (mean=0.78) and from 0.76 to 0.80 for females (mean=0.77). The values calculated by age-group of males divided into age categories by 10-year intervals also showed similar levels; 0.84, 0.76, 0.76, and 0.78 for those aged 20-29, 30-39, 40-49, and 50-59 years. For females, these values by age-group should not be calculated because of the small number of subjects. These values seemed to be at a good level even though the values of the Japanese version CES-D were somewhat lower than those of the original U.S. version.

An initial component solution of the CES-D of the entire sample yielded three factors before the eigenvalue fell below unity. While the analysis performed by sex showed a notable difference in its structure, three factors were extracted for males and five factors for females. Sex difference of the structure could not be discussed exactly since females were much fewer in number than males. Thus, the present study shows the factor structure of the CES-D of the entire sample mainly consisting of males as shown in Table 1. Conceptualization of the extracted factors was according to the items having greater loadings. The factors derived from the CES-D were as follows:

Factor 1: ‘Depressed affect’ (Ten items had significant loadings greater than 0.50 in Table 1).
loadings greater than 0.50. This factor explained 20.3% of the total variance. There were high loadings on items concerned with “I had trouble keeping my mind on what I was doing (item number 5)”, “I felt depressed (6)”, “I was bothered by things that usually don’t bother me (1)”, “I felt that everything I did was an effort (7)”, “I did not feel like eating; my appetite was poor (2)”, “I felt that I could not shake off the blues even with help from my family or friends (3)”, “My sleep was restless (11)”, “I thought my life had been a failure (9)”, “I talked less than usual (13)”, and “I could not get going (20)”. All of these items are deemed to represent various aspects of depressed affect or mood.

Factor 2: ‘Social dysfunction’ (Six items, 14.6%). The items included “I felt sad (18)”, “I felt that people disliked me (19)”, “People were unfriendly (15)”, “I felt lonely (14)”, “I felt fearful (10)”, and “I had crying spells (17)”. They are related to social functioning.

Factor 3: ‘Positive affect’ (Four items, 11.2%). Only four positive items were allocated to this factor: i.e., “I felt that I was just as good as other people (4)”, “I felt hopeful about the future (8)”, “I was happy (12)”, and “I enjoyed life (16)”. The authors compared the present factor structure with those of the U.S. studies2,5) that derived four factors from the CES-D; depressed affect (allocated items were 3, 5, 6, 14, 17, and 18), positive affect (4, 8, 12, and 16), somatic and retarded activity (1, 2, 7, 11, 13, and 20), and interpersonal relations (15 and 19) from the 1st factor to the 4th factor. A brief comparison of the factor structure is as follows: (1) The items significantly loaded on this 1st factor are allocated to both the 3rd factor and half of the 1st factor of the U.S. studies. (2) This 2nd factor consists of the 4th factor and half of the 1st factor of the U.S. studies. (3) This 3rd factor is equivalent to the 2nd factor of the U.S. studies.

In summary, this study presents basic data on the psychometric properties of the Japanese version CES-D in a sample of Japanese workers. The internal consistent reliability was at a satisfactory level; alpha coefficients was 0.79 for males and 0.78 for females. Factors extracted by principal component analysis of the entire sample were labeled “depressed affect”, “social dysfunction”, and “positive affect”. Although a difference was found in the number of derived factors, as with the U.S. studies, the components of the CES-D appear to represent various aspects of depressive symptomatology. In future these tests will be performed on the data of a more representative sample of female workers. According to such examination, a comparison study on depressive symptoms between Japanese and U.S. workers will be practicable based on the CES-D.

Acknowledgments. The authors thank Dr. Yuko Okuyama for providing us the opportunity to conduct the present study.

References

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Received for publication, June 2, 1988
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