Psychometric Properties of the 15-item Fatalism Scale in a Chinese Older Adult Sample: A Cross-validation Study

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Abstract. This study aims to evaluate the factor structure and reliability of the revised 15-item Fatalism Scale. A convenience sample of Chinese older adults (n = 260) was recruited from three elderly community centers in Hong Kong between May and June 2013. Data from 252 participants who completed all 15 items of the scale were used in the current analysis. We examined the scale’s factorial structure by confirmatory factor analysis, reliability by Cronbach’s alpha, and construct validity by correlation with cancer fear. Both a three-factor model at the first level and a one-factor model at the second level provided excellent fits to the data. A high Cronbach’s alpha value of the scale (0.945) and a significant positive correlation between fatalism and cancer fear (r = 0.262; p < 0.001) were observed. We conclude that the revised Fatalism Scale is a valid and reliable instrument to assess fatalism of Chinese older adults.

Introduction

Fatalism is defined as a belief that events are controlled by external forces that humans are powerless to influence them and that the outcome will be negative [1]. Fatalistic belief is believed as a deterrent to healthy behaviors and research has shown that fatalism in health behaviors was related to lower intentions to change behaviors and a wide range of negative health outcomes. Specifically, fatalism was associated with delays in treatment seeking [2], a reduction in the likelihood of engagement in cancer prevention behavior [3], linked with avoidance of cancer-related information [4] and increased risky behaviors of alcohol consumption, smoking, physical inactivity and intake of fruit and vegetable [5,6]. Other studies reported that some demographic variables including age, income and education level [7,8] and psychological variables including depression and spirituality might be associated with cancer fatalism [9,10].

However, the measurement tools used in above quantitative studies varied substantially from a single-item tool to some well-validated tools. The reliability and validity of the measurement instruments affect the internal validity of the study findings. The most frequently used tool for measuring fatalism is the 15-item Powe Fatalism Inventory [11]. However, as noted by the authors of the inventory, its use in Chinese population is questionable due to the cultural issue of the ‘god-related’ subscale. A number of other tools measuring fatalism among people with specific disease or with specific origin have been developed [12,13]. The specificity of these scales on the other hand has limited their applications in general populations.

Shen and colleagues (2009) has recently developed a general fatalism scale which is general in nature that can be applicable to Chinese [14]. In the scale, fatalistic beliefs is conceptualized as a set of health beliefs that encompass three dimensions of predetermination, luck and pessimism. The scale has been reported to have a good psychometric property in samples from the US general population [15]. Later, Leung and colleagues further validated a Chinese version of the 20-item Fatalism Scale using a sample of Chinese older adults in Hong Kong [16]. They used confirmatory factor analysis (CFA) and showed that the original version of the scale did not fit the data adequately. They then used exploratory factor analyses (EFA) to revise the original scale, and found that a reduced 15-item version measuring three dimensions (disease-specific predetermination, general predetermination,
and luck) provided an adequate fit to the data. In particular, five out of the six items from the pessimism dimension did not load on any of the three factors substantially. The reduced version also had high reliability and good construct validity. Yet, the factor structure of the revised version of the scale was replicated in the same sample, and cross-validation using new samples is necessary to confirm its factor structure. This study thus aims to cross-validate the psychometric properties of the 15-item Fatalism Scale in a new sample of Chinese older adults.

**Method**

**Participants and procedures**

A convenience sample of community-dwelling older adults aged 60 or above was recruited from three elderly community centers between in Hong Kong. Participants were excluded if they (1) were diagnosed with a mental disease, had a history of cancer or severely cognitively impaired (i.e. had a score in Mini-Mental State Examination (MMSE) < 18), (2) could not communicate in Cantonese, or (3) suffered from hearing or visual impairment. Standardized and structured questionnaires were used and administered by trained interviewers. The study was approved by the Survey and Behavioral Research Ethics Committee of the Chinese University of Hong Kong.

**Measures**

Fatalism was measured by the revised 15-item Fatalism Scale, which was modified from the original scale developed by Shen et al [14]. The revised scale consists of three dimensions: disease-specific predetermination (6 items), general predetermination (4 items) and luck (5 items). Sample items include ‘If someone is meant to get the serious disease, they will get it no matter what they do’ for disease-specific predetermination, ‘Hong long I live is predetermined’ for general predetermination, and ‘My health is a matter of luck’ for luck. All items are rated on a 5-point Likert scale ranging from 1 = ‘strongly disagree’ to 5 = ‘strongly agree’.

Cancer fear was measured by the alternative version of the 8-item Breast Cancer Fear Questionnaire [17], with the wording altered to refer to cancer in general. The alternative version of the scale measuring cancer in general has been shown to have a high reliability in an older adult sample [18]. Responses were solicited with a 5-point Likert scale ranging from 1 = ‘strongly disagree’ to 5 = ‘strongly agree’, with greater value indicating higher level of fear about cancer. Cronbach’s alpha of the Chinese version of the alternative version for measuring cancer in general was 0.973 in the current sample. In addition, the scale has also been adapted and validated to measure fear of colorectal cancer in a study in Hong Kong [19].

**Data analysis**

Confirmatory factor analysis (CFA) used to assess the factor structure of the 15-item Fatalism scale. A three-factor first-order model with the corresponding items as its indicators in each of the three dimensions was fitted to the data. In this first-order model, all the three latent factors were allowed to correlate to each other. We then tested the second-order factor model which hypothesized that the correlations among the first-order latent factors could be represented by a second-order factor, i.e. a general factor of Fatalism [20]. CFAs were performed by EQS 6.0 [21] using the maximum likelihood estimation with a robust procedure to adjust for the non-normality of the data [22]. Assessment of the goodness-of-fit of the model to the data was based on the three criteria: (1) robust Comparative Fit Index (R-CFI), (2) standardized root mean squared residuals (SRMR) and (3) robust root mean square error of approximation (R-RMSEA). An acceptable fit was indicated by R-CFI > 0.90, SRMR < 0.08 and R-RMSEA < 0.08 [23]. Cronbach’s alpha assessed reliability of the scale. Construct validity of the scale was examined by computing Pearson correlation between the fatalism and cancer fear scores. All tests other than CFAs were performed using SPSS version 22.0. For all statistical tests, a p-value < 0.05 is considered as statistically significant.
Results

A total of 260 Chinese older adults were recruited between in May-June 2013. Eight participants with missing responses in the Fatalism scale were excluded from the analysis, resulting in a final sample size of 252 (96.9%). Mean age for the 252 participants was 77.2 (SD = 8.1), 59.5% were female, 54.0% were married and 25.8% had no formal education. In addition, 17.1% reported had family members with cancer, 68.3% had chronic disease and mean MMSE score was 26.4 (SD = 3.3).

Factor structure, reliability and construct validity

Confirmatory factor analysis revealed that the 3-factor model adequately fits the data (R-CFI = 0.978, SRMR = 0.059, R-RMSEA = 0.065). The second-order model assuming there was a common latent factor representing the three three-order factors also showed goodness-of-fit statistics similar to those of the first-order factor model (R-CFI = 0.978, SRMR = 0.059, R-RMSEA = 0.065), suggesting it is legitimate to create a summary score for the Fatalism Scale. All the standardized factor loadings were large and statistically significant (Fig. 1). Cronbach’s alpha value of the scale was 0.945, and hence we would consider the scale reliable. The correlation between the fatalism scores and the cancer fear scores was 0.262 (p < 0.001).

Summary

In the study, we cross-validated the revised 15-item Fatalism Scale using a new sample of Chinese older adults. The results show that reliability, factorial structure and construct validity of the revised Fatalism Scale were generally supported in a community-dwelling sample of Chinese older adults. These findings provide support for the 15-item Chinese Fatalism Scale as a valid and reliable measurement tool, and may be a useful instrument in research assessment of fatalistic beliefs of the Chinese older people.

References


