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## An exploration of antecedents of positive affect among the elderly: a cross-sectional study

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**Background:** Positive affect contributes to the healthy life style, which, in turn, explains life satisfaction and psychological well-being among the elderly. Existent literature has reinforced that physical activity participation influences development of positive affect for the elderly. Because of the increased life constraints and physical problems, however, maintenance of positive affect might be challenging for elderly people. **Methods:** Data were drawn from a sample of the Survey of Health, Ageing and Retirement in Europe. A total sample of 3845 males and 3912 females aged between 65 and 103 years from 16 European countries was analyzed. Perception of life constraints, health problems, physical activity engagement and positive affect were measured by a structured questionnaire. Confirmatory factor analysis and a technique of structural equation modelling were employed using Amos 18 to examine the hypothesized relationships between study variables. **Results:** Perceived life constraints and physical problems significantly affected the acquisition of positive affect among the elderly. Physical activity was found to have a significant path coefficient towards the measure of positive attitude and emotion. Physical activity was also a significant mediator between physical problems and positive affect. **Conclusions:** This study extended our understanding of how the perception of life constraints and health problems influence the elderly’s daily experience. Study finding reinforced the goodness of physical activity participation to enhance positive affect among the elderly. We should administer sustainable and evidence-based physical activity including interventions and infrastructure to improve positive affect and psychological well-being among the elderly.

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### Introduction

Positive affect plays an important role in the protection against declined physical and mental functions in the elderly.<sup>1–3</sup> That is, positive affect is a critical indicator in the assessment of health-related outcomes due to the contribution to life satisfaction and psychological well-being.<sup>4–6</sup> Positive affect does not only lay emphasis on emotional mood such as being happy or content but embraces the attitudinal mind-set such as an optimistic view of the future.<sup>1</sup> Maintenance of positive affect reflects how people view and constructively manage their everyday experience. Literature has shown that older adults are more likely to have to cope with various psychological and behavioural restrictions in their everyday lives,<sup>7,8</sup> and the mental health is naturally to be weakened to some degree.<sup>9</sup> In our effort to promote healthy aging, we ought to be informed about various factors—social, environmental, physical and personal—that might influence positive affect in the elderly either negatively or positively.<sup>10,11</sup> This study was initiated to provide better understanding of how the negative aging effects were related to the elderly’s positive affect and to seek for practical implications for the elderly.

As aged, many—if not most—experience the physical debility (e.g. a chronic health problem), psychological instability (e.g. fear of death and loneliness) and lack of social opportunity along with retirement.<sup>11–13</sup> Different life constraints, such as lack of money and a sense of out of control, may lead to the low morale regardless of the actual level of functional abilities that diminishes general health and quality life among the elderly.<sup>14</sup> To provide suitable social support and public health improvement for elderly persons, it is important to better understand how their perception of daily difficulties influences quality of life. This study examines whether the perceived life constraints and physical condition influence positive affect in the elderly and further investigates how physical activity engagement contributes to the improvement of positive affect among elderly persons.

Physical activity has been regarded as a significant facilitator of quality life among the elderly.<sup>15–20</sup> Studies have provided empirical evidence that physical activity engagement allows participants to consistently gain health-related benefits such as enhanced physical and mental health, subjective well-being and delayed mortality among the elderly.<sup>21,22</sup> Laditka *et al.*,<sup>14</sup> e.g. reported that the

maintenance of good physical fitness, active social involvement and positive attitudes towards aging contribute to the positive mental outlook and self-efficacy of the elderly. Physical activity participation provides opportunities for the elderly to share their life experience with others and develop social networks and emotional bonds that contribute to the positive emotion and attitude towards life.<sup>15</sup> Regular physical exercise also provides opportunities to develop better coping skills and learn to be resilient to overcome negative physical-psychological effects.<sup>3,17,18</sup>

Building on this idea, I hypothesized that two aspects of aging—perceived life constraints and physical problems—significantly influenced the maintenance of positive mental outlook among the elderly. Also, I hypothesized that physical activity engagement might mitigate the negative effect of aging and increase positive affect. A number of studies have explored the positive associations between physical activity, life satisfaction and psychological well-being among older population; however, no published studies have investigated the relationships between the perception of life constraints, physical health problems and positive affect among the elderly. The finding of the study would provide better understanding of the mechanism of the elderly's daily experience, and how physical activity mediates the relationships between the perceived life constraints, health problems and acquisition of positive affect which, in turn, leads to psychological well-being in the elderly.

## Methods

### Data collection and sample

This study used the data released from the Survey of Health, Ageing and Retirement in Europe (SHARE).<sup>23,24</sup> The SHARE wave 4 contains a wide range of study variables such as physical and mental health, behavioural risks, activities, social networks and cognitive functions among older adults from 16 European countries. From the raw data with 14 645 cases and their responses, 7954 individuals, born between 1910 and 1948, were sorted out. Then, through the data cleaning, a total number of 7757 respondents was retained for the purpose of this study. The respondents' age ranged from 65 to 103 years (mean = 73.21 years, standard deviation = 6.48). The final sample composed of 49.6% men and 50.4% women. With respect to marital status, 65.3% were married, 9.9% were separated or divorced, 10.8% were widowed and 1.8% reported they had never been married.

### Measurement

Perceived life constraint was measured using five questionnaire items (e.g. 'Age prevents from doing things') on a Likert scale, ranging from 1 'never' to 5 'often'. A total of 12 questionnaire items were used to assess the level of physical health problems among the study respondents. The sample items included 'bothered by: pain in back, knees, hips or other joint' and 'bothered by: falling down'. The respondents were asked to check all statements applied to them. I operationalized the level of physical health problems as scores based on a total of 12 items. Items were given a score of 'one' if a person indicated he or she was bothered by, or given a score of 'zero' if he or she did not indicate. After adding up all 12 items' scores, I computed a four-point Likert scale variable with values from 1 '2 or less' to 4 '9 or above' for the analysis.

To assess the intensity of physical activity participation, a single questionnaire item was employed. The respondents were asked to indicate how often they were engaged in physical related activity in the last 12 months. Using a four-point Likert scale, the respondents were to select an answer ranging from 1 'less than every month' to 4 'almost every day'. Positive affect was measured using a total of seven items employing a five-point Likert scale, ranging from 1 'never' to 5 'often'. The questionnaire included an item on the respondents' positive outlook of everyday experience (e.g. 'I look

forward to each day'), self-efficacy (e.g. 'I do the things I want to do') and purpose of life (e.g. 'life has meaning').

### Data analysis

For the data preparation, a descriptive analysis was conducted to understand the structure of the data. I sought to detect any irregularities among the observed variables and corrected them in the data set.<sup>25</sup> I also inspected the item scores that were out-of-range using the distribution of *z* scores for univariate outlier detection and the Mahalanobis distance for multivariate outlier detection. It was evident that none of the individual scores were considered on analysis to be erroneous and extreme. To assess whether the observed variables met the underlying assumption of a normal distribution required in structural equation modelling, a test for univariate and multivariate distribution of the data was performed.

To determine the internal consistency of the measured variables, the Cronbach's alpha value of each construct was calculated. The measurement validity was examined using the Confirmatory Factor Analysis (CFA); the goodness-of-fit indices, including the ratios of chi-squared to the degrees of freedom, Comparative Fit Index (CFI), Normed Fit Index (NFI) and Root Mean Square Error of Approximation (RMSEA) were reported.<sup>26,27</sup> To investigate the hypothesized relationships between latent factors, standardized estimates of path coefficients between the predictor variables were examined. The mediating effect of physical activity participation between the relationships between perceived life constraints, physical health problems and positive affect was also tested. Statistical Package for the Social Sciences (SPSS 16.0) and SPSS Amos 18 software were used throughout the data analysis.

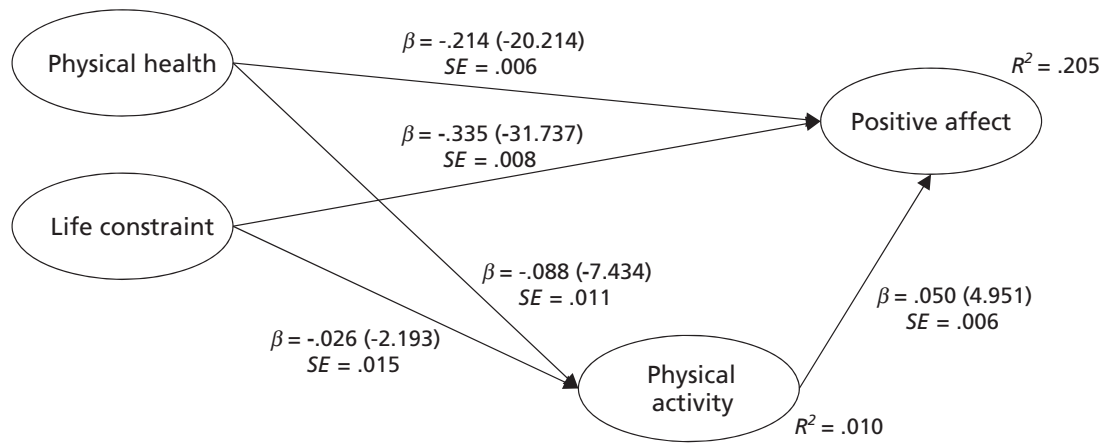
## Results

### Measurement test

The measurement model test was preceded employing CFA to ensure the reliability and validity of the measured variables and constructs. The results of CFA indicated that the measurement variables and constructs were reliable and valid by statistical standard. The measured items were significant, with *t* value ranging from 29.957 to 47.632. The Cronbach's alpha value indicated acceptable reliability coefficients of the measured variables, 0.617 for perceived life constraints and 0.765 for positive affect. Because of the nature of the questionnaire items used to measure physical health problems, the Cronbach's alpha value for this construct was not expected to be calculated. Also, as we used a single questionnaire item to measure physical activity involvement, the Cronbach's alpha value for physical activity was not calculated. The goodness of fit indices of the measurement model indicated an acceptable fit to the sample data:  $\chi^2 = 147.506$  ( $df = 62$ ,  $P < 0.001$ ), CFI = 0.943, NFI = 0.960 and RMSEA = 0.049. Accordingly, the initial measures of the study were retained to examine the study hypotheses in the structural model. In addition, we found that the study variables were moderately correlated with each other ( $-0.029$  to 0.758).

### Hypothesis test

According to the results, the measures of physical health problems ( $\beta = -0.214$ ,  $t$  value =  $-20.214$ ,  $P < 0.001$ ) and perceived life constraint ( $\beta = -0.335$ ,  $t$  value =  $-31.737$ ,  $P < 0.001$ ) were a significant predictor of positive affect. The level of physical activity participation was found to have significant path coefficients towards the measure of positive affect ( $\beta = 0.050$ ,  $t$  value = 4.951,  $P < 0.001$ ). It is also found that perceived life constraint ( $\beta = -0.026$ ,  $t$  value =  $-2.193$ ,  $P < 0.05$ ) and of physical health problems ( $\beta = -0.088$ ,  $t$  value =  $-7.434$ ,  $P < 0.001$ ) were significant predictors of the physical activity participation. In the structural



**Figure 1** Tested relationships and standardized estimates of path coefficients between physical health problems, perceived life constraints, positive affect and physical activity participation.

**Table 1** Summary of the standardized indirect and total effects between latent factors

Path	Indirect	Total	SE	Hypotheses test	
				t value	Results
HthPrbm → PhyAc → PsAf	−0.004		0.001	−4.000*	Supported
LfCnstrn → PhyAc → PsAf	−0.001		0.001	−1.000	Not Supported
HthPrbm → PsAf		−0.219	0.011	−19.909*	Supported
LfCnstrn → PsAf		−0.336	0.011	−30.545*	Supported

HthPrbm, physical health problem; LfCnstrn, perceived life constraint; PhyAc, physical activity; PsAf, positive affect.

\* $P < 0.05$ .

model, the measure of positive affect was accounted from the predictor variables,  $R^2 = 0.21$ ; while that for physical activity participation indicated at a very low  $r$ -squared value of 0.01. Figure 1 visualizes the relationships among latent factors and provides a summary of the standardized estimates of path coefficients in the tested model.

I examined the mediating effect of physical activity on the relationship between physical health problems and perceived life constraint and positive affect. Table 1 summarizes the estimations of the indirect and total effects between latent factors. It was demonstrated that indirect effects of physical health problems on positive affect through physical activity were statistically significant ( $\beta = -0.004$ ,  $t$  value =  $-4.000$ ,  $P < 0.05$ ). The indirect effect through physical activity was computed as the product of the path coefficient from physical health problems to physical activity ( $-0.088$ ) and the path coefficient from physical activity to positive affect ( $0.050$ ). However, the indirect effect of perceived life constraint on positive affect through physical activity, which was computed as the product of the path coefficient from perceived life constraint to physical activity ( $-0.026$ ) and the path coefficient from physical activity to positive affect ( $0.050$ ), was 'not' significant ( $\beta = -0.001$ ,  $t$  value =  $-1.000$ ). That is, physical activity engagement plays an important role in diminishing the effect of physical health problems but not perceived life constraints. The total standardized effect for the measure of physical health problems on positive affect ( $\beta = -0.219$ ,  $t$  value =  $-19.909$ ,  $P < 0.05$ ) and the total standardized effect of perceived life constraint on positive affect ( $\beta = -0.336$ ,  $t$  value =  $-30.545$ ,  $P < 0.05$ ) indicated significant path coefficients by statistical standards.

## Discussion

The purpose of the current study was to explore the relationships between perceived life constraints, physical health problems and

positive affect in the elderly, and to examine the mediating effect of physical activity participation. According to the results, perceived life constraints and physical health problems significantly influenced the measure of positive affect among the elderly. That is, the elderly people with a higher level of perceived life constraints and physical health problems were less likely to achieve positive affect.<sup>12,13</sup> This finding suggests that we should pay more attention to those two factors that influence positive affect which, in turn, contributes to the maintenance of physical, mental and social well-being among the elderly. Future studies should be mindful to elaborate the study finding to further investigate how elderly people view their life constraints and how they cope with the life constraints on a daily basis.

Physical health problems and perceived life constraints were also negatively related to the physical activity engagement among the elderly. People who reported a higher level of physical health problems and perceived life constraints were less likely to participate in physical activity. For the aged, physical activity might be a challenging task due to the deterioration of physical strength or less interest.<sup>28,29</sup> Also, lack of companion and shortage of money may hamper the access to the facilities and physical activity programs.<sup>10,30</sup> All of this suggests that practitioners and social workers in health-related fields ought to not only focus on providing an opportunity for physical activity but also understand intrapersonal barriers that might hinder the elderly's physical activity participation and positive affect. For example, positive social support established through the health intervention and counselling may enable the elderly to better cope with their perceived constraints and physical struggles.<sup>22</sup>

According to the results, physical activity contributed to positive affect among the elderly, which is consistent with the previous literature. That is, those who frequently participated in physical activities were more likely to maintain positive affect.<sup>31–33</sup> Although this study did not investigate the ultimate outcome such as physical improvement, life satisfaction and psychological well-

being, research has shown that possessing positive affect contributes to effective coping skills, adjustment and psychosocial well-being in the elderly.<sup>6</sup> The measure of physical activity participation was also found as a significant mediator between physical health problems and positive mental status. That is, negative impact caused by health problems on positive affect can be alleviated by physical activity participation.

The findings of this study lead to two practical considerations to design effective social support for the elderly: (i) how to minimize the negative aspects of aging and (ii) how to encourage the elderly more to participate in physical activity program. It is important to educate practitioners in the health fields, so that they are well informed and equipped to better communicate with their clients and patients. Having a good understanding of the elderly's daily experience, negotiation strategies can be provided during health intervention and counselling that might help the elderly to coordinate their needs and desires with their daily constraints.<sup>29,34</sup> It is also important to administer sustainable and evidence-based physical activity for the elderly including interventions and infrastructure to improve the cognitive ability and mental health of the elderly.<sup>28,35</sup> Longitudinal program evaluation should be combined to determine whether the elderly participants better cope with their life constraints and experience physical health enhancement through the social support or programs provided.

Along with the significant findings of the study, some limitations should be discussed. The self-reported nature of the questionnaire might result in bias in the relationships between the variables examined in this study. For example, physical health problems were assessed by summing up with the total amount of frequency of different physical difficulties as the respondents reported; therefore, accurate physical health condition was not detected. Future study may employ both subjective and objective evaluations to comprehensively assess the elderly's health status.<sup>36</sup> Although the study employed a sample of 16 different European countries, the sample does not represent all the older population from European countries. Future study should replicate the study finding, either expanding the study sample size or focusing on a single nationality. It is also important to note that there might be a complexity of social, cognitive, physical and environmental correlates of health behaviour and outcomes.<sup>29,37</sup> There is evidence of variability in the level of physical activity involvement (e.g. moderate to intensive) and health-related outcomes according to the difference socio-economic status.<sup>38–40</sup> However, for the simplicity of the study, neither demographic variables (e.g. gender and socio-economic status) nor the type and intensity of physical activity were included in the analysis. Therefore, this study is still at a preliminary stage beyond the significant information demonstrated. I believe the current investigation of the antecedents of the elderly's positive affect is meaningful for future researchers who elaborate the study finding employing such underlying variables that will expand our understanding of the elderly's perception of life constraints and health, and positive affect.

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## Key points

- Perceived life constraints and physical health problems significantly predicted positive affect among the elderly.
- Physical activity engagement helps the elderly to improve their positive affect.
- Public health workers and practitioners should be well informed and equipped to better communicate with the elderly and provide effective negotiation strategies that help the elderly to coordinate their needs with their daily constraints.
- Sustainable and evidence-based physical activity should be administered for the elderly including interventions and infrastructure.

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