



## Personal goals and changes in life-space mobility among older people<sup>☆</sup>



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### ABSTRACT

**Objective.** Life-space mobility – the spatial extent of mobility in daily life – is associated with quality of life and physical functioning but may also be influenced by future orientation expressed in personal goals. The aim of this study was to explore how different personal goals predict changes in older people's life-space mobility.

**Methods.** This prospective cohort study with a 2-year follow-up included 824 community-dwelling people aged 75 to 90 years from the municipalities of Jyväskylä and Muurame in Central Finland. As part of the Life-Space Mobility in Old Age study (LISPE), which was conducted between 2012 and 2014, the participants responded to the Life-Space Assessment and Personal Project Analysis in addition to questions on socio-demographics and health. Data were analyzed using generalized estimation equation models.

**Results.** The results showed that goals indicating a desire to be active in daily life, to stay mentally alert, and to exercise were associated with higher life-space mobility, and that the associations remained over the follow-up years. Goals related to maintaining functioning predicted higher life-space mobility at the 2-year follow-up. In contrast, goals reflecting improvement of poor physical functioning predicted lower life-space mobility. The results remained significant even when adjusted for indicators of health and functioning.

**Conclusions.** This study indicates that supporting older people in striving for relevant personal goals in their lives might contribute to a larger life-space and thus also to improved quality of life in old age.

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### Introduction

Going outside one's home and moving in and outside of the neighborhood is an important element in living a meaningful life in old age, as it enables the use of community amenities and participation in social activities (Satariano et al., 2012). Restrictions in life-space mobility, a measure reflecting everyday movement in different life-space areas (bedroom, home, outside home, neighborhood, town, outside town; Baker et al., 2003), is common in old age (Allman et al., 2006; Barnes et al., 2007). Besides higher age, functional limitations have consistently been correlated with lower life-space mobility. Also, female sex, lower education and income, depressive symptoms, cognitive decline, and transportation problems are associated with life-space restriction (Al Snih et al., 2012; Barnes et al., 2007; Peel et al., 2005; Sartori et al., 2012). Higher life-space mobility has been associated with sense of autonomy (Portegijs et al., 2014a), extraverted personality, social activity, and orienting more toward the future instead of only the

present day (Barnes et al., 2007). Higher life-space mobility correlates with better quality of life (Rantakokko et al., 2013, under review) and may even decrease the risk of frailty and mortality (Xue et al., 2008). Consequently, finding ways to maintain or increase life-space mobility could contribute to well-being in old age.

People often act according to their personal goals (Deci and Ryan, 2000), which are highly individualized states that people strive to achieve or avoid in the future (Freund and Riediger, 2006). In old age, personal goals most often relate to health, close relationships, and leisure time activities (Lawton et al., 2002; Saajanaho et al., 2014a). Previous research has indicated that older people's goals are affected by their health and functional limitations (Lawton et al., 2002; Saajanaho et al., 2014a). Previously, goal engagement in old age has been associated with more activity participation (Holahan, 1988) and better psychological well-being (Lawton et al., 2002). Also, having relevant personal goals may help older people maintain higher exercise activity (Saajanaho et al., 2014b). Goal engagement may be a resource for facing age-related health deterioration (Haase et al., 2013) and thus potentially prevent people from drifting into a vicious circle resulting in decreased life-space mobility and eventually home confinement—a situation that in practice renders active aging impossible.

Life-space mobility is affected by multiple factors, and not by physical functioning alone (Allman et al., 2006). Previous studies have not explored how goal engagement is reflected in life-space mobility,

*Abbreviations:* LISPE, Life-Space Mobility in Old Age; LSMC score, life-space mobility composite score; GEE model, generalized estimating equations model.

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although it seems reasonable to assume that some goals require moving in a larger life-space than others. Personal goals can function as a pathway to maintaining valued behaviors throughout the life course (Baltes, 1997). It can be argued that not striving for personal goals could constitute a risk factor for life-space restriction, whereas engagement in relevant personal goals could contribute to maintaining and achieving higher life-space mobility. The purpose of this study was to explore how the content of older people's personal goals affects life-space mobility over a 2-year follow-up.

## Methods

### Participants

The present data came from the Life-Space Mobility in Old Age study (LISPE), which was a 2-year prospective cohort study of community-dwelling older people aged 75 to 90 years conducted in the municipalities of Jyväskylä and Muurame in Central Finland. Details of the recruitment procedure and the study flow of LISPE have been described in detail elsewhere (Rantanen et al., 2012). A random sample of 2550 people was drawn from the national population register. These individuals were contacted to ascertain their interest in taking part in the study. To be included, the participants had to be living independently in their own homes, not have any severe problems in communication, and be willing to participate in the study. Finally, 848 people (62% female) participated in a structured home interview implemented between January and June in 2012. The first follow-up was conducted one year, and the second follow-up two years after the baseline assessment. The first follow-up was conducted via telephone interviews and the second follow-up via telephone interviews and postal questionnaires. During the two follow-up years, 41 participants died and 15 were admitted to institutional care. Other reasons for attrition were inability to communicate (12), moving outside the study area (6), poor health (5), not willing (6), and not reached (2). The present analyses utilize data on 824 older people who had answered the question on personal goals at baseline. Of these, 795 participated in the 1-year and 742 in the 2-year follow-up.

This study was approved by the ethical committee of the University of Jyväskylä, Finland, and the participants gave their written informed consent. Good scientific practice was followed throughout the study in accordance with the principles laid down by the Declaration of Helsinki.

### Measurements

#### Life-space mobility

Life-space mobility was measured using the University of Alabama at Birmingham Study of Aging Life-Space Assessment Baker et al. (2003) in face-to-face interviews at baseline and in telephone interviews at the first and second follow-ups. The Life-Space Assessment was translated into Finnish (Rantanen et al., 2012). A test–retest study found the measurement to be fairly reliable and responsive to change in the Finnish context regardless of season (Portegijs et al., 2014b). The assessment includes six nested life-space tiers starting from the bedroom and expanding to include home, yard, neighborhood, town, and beyond town. The participants were asked how often they moved in these different life-space tiers and whether they needed help from any devices or another person to do so. For the analysis, we used the life-space mobility composite score (LSMC score), which reflects the distance, frequency, and level of independence of mobility. The score ranges from 0 to 120 with higher scores indicating higher life-space mobility.

#### Personal goals

The content of personal goals was asked with a revised version of Brian R. Little's (1983) Personal Project Analysis. The following instruction was used in the interview: "We all have different personal goals that we strive to realize in our daily lives or reach in the future. The goals may be related to any life domain, such as hobbies, daily life, health, family, or friends. Think about the goals you have at the moment. The goals can be big or small; the main thing is that they are important for you." The participants reported between zero and seven personal goals. A coding scheme with 25 goal categories was designed for the purpose of classifying goal content, utilizing the coding scheme developed by Salmela-Aro et al. (2009). The goals were classified independently by two trained assessors, and the percentage rate of agreement between the assessors was 89%. Discrepancies between the assessors were discussed until total

agreement was achieved. Each of the 25 personal goal categories was coded on a dichotomous scale, 1 indicating having at least one goal in the category, and 0 no goals in the category. A person could have goals in several different categories or several goals in one category. We added a separate category of "no goals," in which 1 indicated having no goals and 0 at least one goal in any of the 25 goal categories. The goal categories and examples of their content are presented in Table 1.

#### Covariates

Participants' date of birth was derived from the national population register, while the data for all the other covariates were collected during home interview. The other covariates were years of education, perceived economic situation (good or very good vs. moderate, poor, very poor) and perceived difficulties in walking 2 km (no difficulties, minor difficulties and major difficulties/unable). Number of chronic diseases was calculated based on physician-diagnosed conditions, self-reported from a list of 22 chronic conditions, including e.g., coronary artery disease, arthritis, diabetes, cancer, Parkinson's disease, Alzheimer's disease or other dementia, depression, visual impairment, and hearing loss. Diagnoses not included in the list were prompted with an additional open question (Portegijs et al., 2014a).

#### Statistical analysis

The descriptive characteristics of the participants are reported as mean values and standard deviations for continuous variables and percentage distributions for categorical variables. Independent-sample *t*-test and chi-square test were used to compare differences in the descriptive characteristics between those who did versus those who did not report at least one personal goal. The correlations between the study variables were computed using Spearman's rank correlation coefficient.

To study the changes in the LSMC score based on reporting vs. not reporting personal goals in each goal category, we conducted a generalized estimating equations (GEE) model (Liang and Zeger, 2006) by specifying an unstructured outcome covariance matrix. This feature is an advantage in comparison with models that are based on the assumption of compound symmetry (i.e., constant covariance) of the outcome covariance matrix (e.g., repeated-measures variance analysis). We estimated main effects of personal goals on life-space mobility and time interaction effects for the 1- and 2-year follow-ups. Due to the large number of goal categories, we only included in the analysis goal categories for which a significant difference ( $p < .10$ ) was observed in the LSMC score at baseline or at either of the follow-ups. Also, categories in which fewer than 30 participants reported having goals were not analyzed further as lack of power prevented meaningful multivariate modeling. This resulted in 11 goal categories for inclusion in the GEE model. As the correlations between the goal categories were low (range from  $-.131$  to  $.194$ ), indicating no substantial collinearity, we were able to include all of them in the same model as individual dummy predictor variables. We conducted an age and sex-adjusted model, and a model which was further adjusted for years of education, perceived economic situation, number of chronic conditions, and perceived difficulties in walking 2 km (fully adjusted). There were no substantial differences between the models, and thus we report only the results of the fully adjusted model. A separate GEE model with similar adjustments, in which at least one goal reported was as a predictor variable, was used to study changes in the LSMC score. The level of statistical significance was set at  $p < .05$ . The analyses were conducted using SPSS 20.0 for Windows (IBM SPSS Inc.).

## Results

### Descriptive results

The average age of the participants was  $80.6 \pm 4.2$ , 62% of them were women, and 41% reported having at least minor difficulties in walking 2 km. The average LSMC score was  $64.3 \pm 20.5$  at baseline,  $62.6 \pm 22.0$  at the first follow-up, and  $61.7 \pm 21.9$  at the second follow-up. The participants reported between zero and seven personal goals. Those who did not report any goals were older, had somewhat less education, more often reported having difficulties in walking 2 km, and had a lower LSMC score compared to those reporting at least one personal goal (Table 2).

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