

# The Effect of Family Situation on Mobility at Old Age

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## INTRODUCTION

There has been a long research tradition that explores the relationship between marital status and health (e.g. Martikainen et al., 2005), and more recently between household arrangements and health (Hughes y Waite 2002). Members of a household share the same social and economic situation and they live according to roles within a household that may actually be positive or detrimental for their own health or that of the partner. Both selection forces into marriage and partnership as well as protective effects of marriage and partnership have been mentioned as possible explanations for the health advantage of the married and those living with a partner.

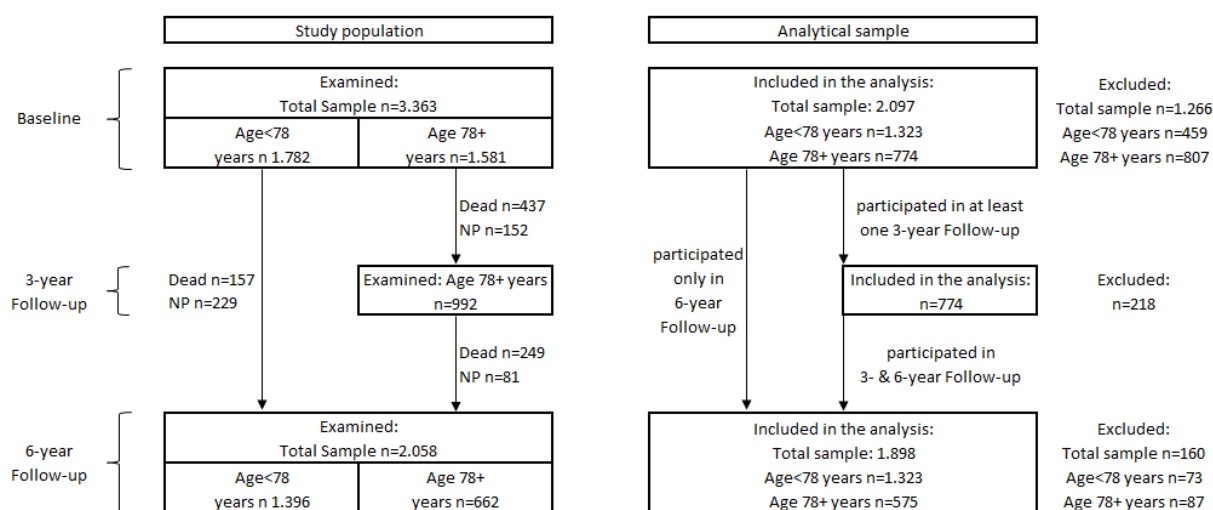
Children are important resources for the elderly. A series of studies has shown that the number of children is related to health among the elderly, particularly among women, less so among men (Doblhammer 2000, Grundy and Tomassini 2005; Mirowsky 2005; Henretta 2007). While the fertility history is closely intertwined with the partnership history, there appear to exist independent effects of parenthood caused by biological as well as social factors. Both can be positive or detrimental to health and, in addition, are complicated by selection effects that affect both fertility and health (Grundy and Read 2015).

This study aimed at exploring the relationship between family situation measured in terms of partnership and parenthood, and mobility in a longitudinal perspective. Mobility has been shown as an important predictor of health and survival at old age. It is both related to physical fitness and social participation. We used an objective measure of walking speed to test possible selection forces and/or protective factors (Shumway-Cook et al. 2005). We hypothesized that those living with a partner and having children would have the best walking performance and would maintain it for a longer period, due to the health selection into partnership and parenthood as well due to protective effects. On the contrary, the childless without a partner would fare worst. The other groups (either with partner or children) would fare intermediate.

## STUDY POPULATION AND METHOD

Study population: We used the Swedish National Study on Aging and Care in Kungsholmen (SNAC-K) – a part of Stockholm. The sample included persons aged 60 years, living in private or institutional households. The study used stratified sampling; the population was stratified by age, and then a random sample was selected from each age group. Baseline survey was conducted 2001-2004 and follow-up is performed every 6 years for younger cohorts (60–78 years) and every 3 years for older cohorts (78+ years). Data was collected at the research center or at the participants' homes through interviews, clinical examinations, and testing by trained staff. The following figure shows the structure of the study population and the final analysis sample of our study.

Figure 1: Study population and analytical sample



Source: SNAC data 2004-2010, own calculations.

At baseline, the study population consisted of 3,363 people, with 1,782 respondents below age 78 (young), and 1,581 persons aged 78 years and above (old). Among the young, 157 died before the six-year follow-up and 229 moved/refused to further participate resulting in 1,396 respondents, all of whom have information at baseline and in the follow-up. Among the old, 437 died and 152 dropped out due to other reasons. Thus, 992 persons were re-examined at the first follow-up after three years. Of these, 662 also participated in the 6-year follow-up whereas 249 people died between the 3- and the 6-year follow up and another 81 persons didn't participate for other reasons.

We excluded all participants who were unable to walk at the baseline examination, resulting in an analytical sample of 2,097 persons (Figure 1) (1,323 young and 774 old participants at baseline).

**Mobility:** Mobility is measured in terms of walking speed. Respondents who considered themselves as normal or fast walkers were requested to take a 6 m long walk; otherwise, they did a 2.4 m walk. Time was measured in seconds. Exploring the level of health, we divided the sample into fast and slow walkers using the median (1 m/s). Exploring the change in health between the follow-up and the previous wave, those with a walking speed decrease of more than one standard deviation (as compared to the baseline) were defined as having experienced a decline.

**Family Situation:** We distinguish four groups defined by whether they have children and live with a partner: (1) childless, no partner; (2) childless, in partnership; (3) child(ren), no partner; (4) child(ren), in partnership.

**Covariates:** We controlled for socio-demographic characteristics (age, sex, the type of residence, an index of socio-economic status), life-style and health characteristics (body mass index, alcohol consumption, physical activities, chronic morbidities, ADL), genetic susceptibility (APOE ε4 allele), and depressive symptoms (signs of sadness, pessimistic thoughts, feelings of loneliness). In addition we controlled for walking speed at baseline, and the wave of the follow-up (3-year and 6-year).

Statistical Analysis: We performed two types of GEE-regressions with a binary outcome variable and a logistic link function. (1) In the “Level Model” we predicted the walking speed in the follow-up by the characteristics of the previous wave; (2) in the “Change Model” we explored the change in walking speed between two waves using the characteristics from the first of the two waves as predictors.

## RESULTS:

*Level Model:* We found significant differences in walking speed by household/family situation: Respondents *with children but without a partner* had the lowest risk of walking slowly, the *childless living without a partner* had the highest. The difference between the two groups was highly significant and could not be explained by other characteristics. The better walking performance of respondents *with children living in a partnership* was attenuated and no longer significant when including lifestyle factors in the model. Women had a higher risk of walking slowly than men, and the association between household/family position and walking speed was only significant for women, not for men.

Table 1: GEE- logistic regression model of the risk of slow walking speed (Level Model)

Level Model (cut off: median)									
1: <= median (1m/s)	M1	M2	M3	M4	M5	M6	M7	Men	Women
<b>Sex (ref.: male)</b>									
female	1,44***	1,44***	1,45***	1,38**	1,40**	1,42**	1,41**		
<b>Family position (ref.: childless, no partner)</b>									
childless, in partnership	0.83	0.84	0.86	1.01	0.99	0.99	1.01	0.97	1.02
child(ren), no partner	0,66**	0,66**	0,65**	0,67*	0,65*	0,66*	0,66*	0.97	0,57**
child(ren), in partnership	0,67**	0,68*	0,70*	0.81	0.83	0.82	0.83	0.92	0.81
not specified	0,60*	0,60*	0,56*	0,62°	0,61°	0,62°	0.63	0.39	0.65

Controlled for: M1: age; M2:+type of residence; M3 +SES; M4:+life style; M5:+physical health; M6: +depressive symptoms; M7: +duration of follow-up; Gender specific model is based on M7; Source: SNAC data 2004-2010, own calculations.

*Change Model:* *Childless persons living in a partnership* had the highest risk for a strong negative decline in walking speed in both sexes. All other groups did not differ significantly from the reference group (childless, no partner). Male walking speed tends to deteriorate faster than female.

Table 2: Logistic regression model of the risk of deteriorating walking speed (Change Model)

Change Model (cut off: 1 SD)									
1: <= -1 SD	M1	M2	M3	M4	M5	M6	M7	Men	Women
<b>Sex (ref.: male)</b>									
female	0.86	0.86	0.86	0.84	0.84	0.84	0.84		
<b>Family position (ref.: childless, no partner)</b>									
childless, in partnership	1,63*	1,64*	1,63*	1,58°	1,61*	1,65*	1,65*	1.75	1.49
child(ren), no partner	1.06	1.06	1.06	1.03	1.05	1.05	1.05	0.84	1.12
child(ren), in partnership	1.08	1.09	1.08	1.04	1.09	1.11	1.11	0.83	1.33
not specified	0.94	0.94	0.93	0.86	0.85	0.85	0.85	0.56	0.97

Controlled for: M1: age; M2:+type of residence; M3 +SES; M4:+life style; M5:+physical health; M6: +depressive symptoms; M7: +duration of follow-up; Gender specific model is based on M7; Source: SNAC data 2004-2010, own calculations.

## DISCUSSION:

Family situation significantly predicts health in terms of walking speed. Those with children and not living in a partnership have a lower of risk of slow walking speed three (six) years

later, although this effect seem to be explained by lifestyle factors. In addition, childless persons in a partnership showed the steepest decline, supporting the hypothesis that the presence of children but not necessarily of a partner is protective (in addition to possible health selection forces).

Contrary to our initial hypothesis, participants with children but without a partner have a lower risk of poor walking performance; however, their lower risk cannot be explained by other the characteristics. While for most of their life their family situation might have been similar to those with children and living with a partner, they face now a life situation, where they have to be more self-dependent. As a consequence they may stay more active, with a positive impact on their mobility. This supports the notion that living in a partnership may not only have positive effects on health by establishing roles that can also be detrimental. However, this result also points towards the limits of using walking speed as a predictor of health because a large number of studies show that individuals living without a partner have generally worse health outcomes. While living without a partner may increase physical fitness, it is also associated with a lack of resources in critical life phases which might influence health negatively.

Family status appears to be associated with walking speed among women only. This may be explained by the general higher physical fitness of men and a gender-specific preference for time use. Time use surveys show that elderly men use more of their time for sport, while women are more heavily engaged in social activities.

Regarding the change in walking speed, our initial assumption was that those who live by their own, the childless without a partner, lack most family resources and will have the strongest decline. However, they do not differ from those with more resources and it is the childless in partnership that experienced the most dramatic negative decline. This may be an indication for both selection and possible negative consequences of living in a partnership. Negative health selection into childlessness may be combined with a lack of self-dependency in terms of physical activity.

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