

VULNERABILITY AND ENVIRONMENTAL STRESS OF OLDER ADULTS IN DEPRIVED NEIGHBOURHOODS IN THE NETHERLANDS

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ABSTRACT

Recent policy rests on the assumption that it is better for older people to live independently within the community for as long as possible. A related assumption is that the local community forms a supportive context for vulnerable older people; the environment can compensate the limitations resulting from growing old. However, Lawton's 'environmental docility hypothesis', in which the interaction between characteristics of the environment and a person's competence is described, forms a reason to be more careful with this assumption. In a survey of 1,939 Dutch older adults carried out in 2002–2003 this hypothesis is explored for older people living in deprived and non-deprived neighbourhoods. The results of the analysis seem to be in line with Lawton's hypothesis. In non-deprived neighbourhoods, no differences in environmental stress are found between vulnerable and non-vulnerable older adults, while in deprived neighbourhoods vulnerable older adults experience significantly higher levels of environmental stress than non-vulnerable older adults.

Key words: Older adults, deprived neighbourhoods, vulnerability, environmental stress, neighbourhood satisfaction, feelings of safety

INTRODUCTION

The important issue of the ageing population features frequently in public debate in the Netherlands. Politicians and policy-makers are concerned about the consequences of the growing number of vulnerable older people. Although most older adults are healthy, active and mobile, the group of older adults referred to as the 'old old', or the 'fourth age', are particularly associated with vulnerability (Neugarten 1974; Baltes & Smith 2003). These older adults are at risk in terms of wellbeing, participation and integration.

Recent policy documents and reports give priority to living in the community rather than the institutionalisation of older people with func-

tional dependency. The local community is supposed to form a supportive environment for vulnerable older adults (Koops & Kwekkeboom 2005; Wiles 2005). However, whether the support of the immediate environment is adequate in preventing vulnerable older adults experiencing stress and isolation is uncertain.

Gerontologists point to the multidimensionality and the cumulative character of the concept of vulnerability (Soldo & Longino 1988; De Klerk *et al.* 2004). The first dimension refers to personal functional incapacities. The second dimension concerns household resources and the way these resources can be used to compensate for the negative effects of individual limitations. The availability of a partner and an adequate income constitute the most important

household resources. The third dimension refers to the adequacy of the social and physical environment in which an older person lives, and the way in which the local environment compensates individual's functional limitations and lack of resources within the household. According to Phillips *et al.* (2005, p. 147): 'the local environment is likely to be crucial to older persons, arguably even more so than for younger people, being the milieu in which they live and which therefore creates or hinders opportunities for ageing in place'.

Some neighbourhoods support older people with functional limitations; these neighbourhoods provide safe environments with good housing conditions and infrastructure, adequate service provision, supportive neighbours and a warm social climate. Older people with functional limitations find it difficult to manage in certain other neighbourhoods; these feature physical and social deprivation, bad housing conditions, poor infrastructure, unsafe public spaces, poor service provision and a lack of social cohesion. The most vulnerable older adults are those with functional limitations without adequate household resources living in deprived neighbourhoods. The cumulative effects of individual limitations, lack of household resources and an inadequate neighbourhood context are likely to result in perceptions of environmental stress.

Many studies of deprived neighbourhoods concentrate on the effects of neighbourhood deprivation for the socialisation of youth or the employment opportunities of the adult population (see for example Wilson 1991; Wacquant 1993; Musterd *et al.* 2003). A few studies have focused on the consequences of neighbourhood deprivation for the perceptions of wellbeing of the older population (see for example Scharf *et al.* 2004). It remains unclear, however, whether vulnerable older adults are more influenced by neighbourhood deprivation than older adults who are not vulnerable. The relationship between neighbourhood deprivation and the environmental stress of vulnerable older adults form the main theme of this paper.

The dataset used was collected within the framework of the European Study of Adult Well-Being (ESAW) 2002–2003 (Ferring *et al.* 2003).¹ Older adults are defined as adults aged between 50 and 90; those included in this study were

living independently. In the Netherlands, 1,939 older adults were interviewed with the aid of a structured questionnaire. Descriptive analyses and logistic regression analyses have been carried out.

VULNERABILITY IN OLD AGE

Vulnerability in old age can be defined as the aggregate of all the factors that negatively affect independent functioning in daily life (Soldo & Longino 1988; De Klerk *et al.* 2004). The concept is multidimensional and takes account of cumulative effects. Three different factors occurring at the same time are expected to result in a vulnerable position of older adults.

Personal functional dependency – In general, when considering vulnerability among older adults, personal health status is viewed as the starting point (Soldo & Longino 1988; De Klerk *et al.* 2004). The crucial question is whether health problems have behavioural consequences. Not all diseases lead to the same extent of impairment and not all impairments result in functional limitations. These limitations relate directly to the need for assistance in performing basic activities in daily life (Katz 1983; Deeg 2002). In many studies, these functional dependencies are indicated by using a list of (instrumental) activities of daily living: (I)ADL (Soldo & Longino 1988), such as housework, shopping, walking without help, preparing meals and getting dressed.

Household resources – Although functional dependency forms a risk factor in terms of vulnerability, the potential negative effects can be compensated for by the use of resources within the household. Deeg & Smits (1995) argue that the availability of two different household characteristics is relevant in this respect: first, the presence of other people within the household and, second, the adequacy of the household income. Household members, the partner in particular, are important as care-givers for older adults with functional limitations and enable many dependent older adults to continue to reside in the community for a longer time (Soldo & Longino 1988). Older adults who live alone have to organise external help, which is expensive and less flexible in time and duration as compared

with a supportive household member. An adequate income allows older adults to compensate for functional limitations by means of paid personal or material support, such as a domestic help, paid care-giver, home improvements, taxi or adapted car. The Dutch welfare state subsidises in many cases the costs of these types of support for low-income households. However, older adults with higher incomes avoid being confronted with formal regulations to assess eligibility for state-provided care and reduce their dependency on the availability and proximity of informal care (Kullberg 2005).

Neighbourhood context – From a geographical point of view an interesting effort to develop a concept that acknowledges the relationships between the (spatial) environment and the behaviour of older people stems from the work of environmental psychologists. In their ‘ecological model of aging’, Lawton & Nahemow (1973) introduce the concept of ‘environmental press’: environmental characteristics may have some demand quality for individuals. Demands can be all kinds of social and physical characteristics, ranging from climate, the distance and accessibility of services and other people, safety and manageability of public space through its design or the extent of crime taking place there, to the safety and manageability of the environment within one’s own home (Rowles 1978).

Further, Lawton and Nahemow’s model acknowledges the interaction between the individual and the environment. The extent to which environmental characteristics act as positive, neutral or negative presses also depends on the competence of the individual, which is formulated in the ‘environmental docility hypothesis’: the less competent the individual, the greater is the impact of environmental factors on that individual (Lawton 1982). Other researchers also argue that besides one’s own dwelling, the social and physical characteristics of the neighbourhood can be critical, particularly for vulnerable older adults (Kellaher *et al.* 2005).

Neighbourhoods can be classified on the basis of the ‘demand character’ of its social and physical context; some environments make great behavioural demands on people, while others do not. In this research, the neighbourhood in

which the older adult lives is considered to be a total constellation of environmental demands for that older adult. Discussions in both the public debate and the research literature on the relationship between neighbourhood characteristics and individual opportunities or constraints pay considerable attention to the effects of living in socio-economically deprived neighbourhoods. Neighbourhood deprivation is a multidimensional concept. Although low income is an important characteristic of deprived neighbourhoods, not all low-income neighbourhoods are deprived (Musterd & Murie 2006). Non-participation and non-integration, in particular with respect to the labour market, are considered to be the most important dimensions of neighbourhood deprivation (Wilson 1991; Kesteloot 1998, Scharf *et al.* 2004; Musterd & Murie 2006). Deprived neighbourhoods accumulate physical and social characteristics such as poor housing and public spaces, inferior services, residential instability by selective outmigration, high crime rates and social disorder.

Most literature on deprived neighbourhoods refers to neighbourhoods in large cities, because that is where the accumulation of deprivation is most likely to occur. Nevertheless, deprivation can be found in both rural and urban environments (Joseph & Cloutier-Fisher 2005; Phillips *et al.* 2005). In the Netherlands, deprivation prevails in the most urbanised areas in large cities as well as in a number of small settlements in the most peripheral rural areas (Van Engelsdorp Gastelaars *et al.* 1980; Van Wilsem & Oudhof 2001).

VULNERABILITY AND ENVIRONMENTAL STRESS

The outcome variable of Lawton and Nahemow’s model is behaviour. This behaviour may be an inner affective response, such as self-reported life satisfaction or mood (Lawton 1982). Another body of literature uses the term environmental stress to describe the process in which people experience emotional distress in relationship to environmental exposures (see for example Baum *et al.* 1982; Dupéré & Perkins 2007). Extreme stress reactions involve symptoms such as fear, anxiety or anger, but also include coping or adaptive processes.

With respect to vulnerable older adults living in deprived neighbourhoods two general affective responses are of special interest here: neighbourhood satisfaction and feelings of safety. It should be acknowledged that, although affluent people are more able to reside in an environment of their own choice, in general residential satisfaction among older adults is high, even in less favourable neighbourhoods. Most older adults have long residential occupancy and have developed an emotional attachment to the place where they live (Golant 1984). Tuan (1977) describes a place as a type of object in which one can dwell and which stands for security and stability. He states (p. 33): 'Place can acquire deep meaning for the adult through the steady accretion of sentiments over the years'. Rowles & Watkins (2003) speak of older adults 'being in place', which is a state of existence characterised by feeling comfortable at home and at one with one's environment. However, according to Rowles and Watkins, older adults can become 'out of place', and thus feel less comfortable with one's environment after changes in personal circumstances or after neighbourhood transitions.

In a case study of Hong Kong (Phillips *et al.* 2004), the exterior physical environment and security concerns appear to be important contributors to the residential satisfaction of older adults, even though older adults living in less favourable environments seem to detach themselves more strongly from the exterior environment. Other researchers demonstrate how 'environmental impoverishment' at neighbourhood level expresses itself among older adults in terms of dissatisfaction with the neighbourhood and feelings of unsafety, or perceived problems with local crime (Soldo & Longino 1988; Scharf *et al.* 2004). In the Netherlands, Kullberg (2005) shows that, besides inappropriate dwellings, dissatisfaction with the social climate of the neighbourhood is one of the most important reasons for older adults moving, or wishing to move.

We therefore expected older adults who live in deprived neighbourhoods to experience stress from their environment in terms of dissatisfaction with their neighbourhood and feelings of unsafety. However, several authors indicate that living in a deprived neighbourhood

does not affect all people in the same way. Kellaher *et al.* (2005, pp. 76–77) assert: 'Aspects of the external environment of proximate neighbourhood, previously managed without preoccupation, can turn into serious hazards, not only because they lead into physical injury when there are accidents, but also because confidence is eroded'. Stafford & Marmott (2003) found that negative health effects are more likely to occur among poor households than among prosperous households in deprived neighbourhoods, but not in affluent neighbourhoods. In accordance with Lawton's (1982) 'environmental docility hypothesis', we expected that older adults without functional limitations and with adequate household resources are able to live satisfying lives in a variety of not only favourable, but also unfavourable environments. On the other hand, frail older adults with few resources are hypothesised to experience high levels of environmental stress in terms of neighbourhood dissatisfaction and feelings of unsafety in deprived neighbourhoods, while feeling satisfied and safe in non-deprived neighbourhoods.

DATA AND METHODS

The analysis is based on the Dutch dataset collected within the framework of the European Study of Adult Well-Being (ESAW) 2002–2003 (Ferring *et al.* 2003). In total 1,939 men and women aged 50 to 90 years and living in the community were interviewed face-to-face. The age category of 50 to 90 is in accordance with a broad definition of 'older adults' and represents adults who are at the very beginning of the ageing process as well as the old old. The interviews were conducted within three regions in the Netherlands: Noord-Holland (the cities of Amsterdam, Zaanstad and the village of Landsmeer); Noord-Brabant (the city of 's-Hertogenbosch and surrounding villages); Drenthe (the city of Hoogeveen and surrounding villages). The sample included a differentiation between deprived and non-deprived neighbourhoods, in both cities and rural locations. The total sample was proportionate to the national distribution along eight age/gender groups. The response rate was 43 per cent.

The deprived/non-deprived dichotomy was based on two main dimensions of deprivation:

income and labour-market participation. Both data were available within the data bank of Statistics Netherlands 'Statline for 1999'. All 'deprived' neighbourhoods in the ESAW sample are low-income neighbourhoods (low average income per inhabitant, high percentage of inhabitants with low income, low percentage of inhabitants with high income) and neighbourhoods with low labour market participation (high percentage of inhabitants with social security payments). Most of the selected neighbourhoods, such as Poelenburg in Zaanstad, Kolenkit in Amsterdam and De Hambaken in 's-Hertogenbosch, occur on the top list of deprived neighbourhoods in the Netherlands for which special monitoring and improvement programmes are developed by national and local governments (see for example, VROM 2006; Bureau Onderzoek & Statistiek 2007). In these neighbourhoods attention is paid to improving the general quality of life, the quality of the physical and social environment, and improving objective and subjective safety. The non-deprived neighbourhoods in the ESAW sample are neighbourhoods with a relatively high income and low percentage of inhabitants with social security payments. It should be noted that the neighbourhoods were not selected randomly and do not represent the total range of degrees of deprivation in neighbourhoods in the Netherlands. In the ESAW sample 757 respondents live in deprived and 1182 in non-deprived neighbourhoods, 1149 in cities and 790 in villages.

The starting point of vulnerability of the older adults, the functional dependency of the older individual, was expressed in the respondents' subjective judgement of their ability to perform without help 14 different (instrumental) activities of daily living, such as housework, shopping, walking and preparing meals. A distinction was drawn between older adults who reported needing (some) help for at least one activity and older adults not needing any help. It should be noted that the group of older adults who have severe limitations, but still live independently, are underrepresented in the sample, because they were too frail to respond to the questions.

Vulnerability regarding household resources was assessed on the basis of the indicators 'household composition' and 'household

income'. Older adults living alone were compared with older adults with a partner, children and/or other household members. Low-income households were compared with higher incomes. The upper level of the low-income category is defined as 1,100 € per month for people living alone and 1,500 € for multiple person households.

Because the study did not provide for theoretically-based indicators to measure supportiveness ranging from low to high on the neighbourhood level, a dummy was used to measure the neighbourhood dimension of vulnerability. The dummy distinguishes the group of older adults living in deprived neighbourhoods from the group of older adults in non-deprived neighbourhoods. Hence, the study cannot make generalising statements on the supportiveness of neighbourhoods in the Netherlands, but may give more insight into the relevance of acknowledging the position of vulnerable older adults within different types of local environments.

Table 1 presents the background variables, including the control variables age and gender, describing the characteristics of the older adults selected in the two neighbourhood types. The age composition in the two neighbourhoods is similar. In the deprived neighbourhoods, slightly more respondents were men. The older adults in deprived neighbourhoods often have more functional dependencies than older adults in non-deprived neighbourhoods. With respect to household vulnerability, in deprived neighbourhoods slightly more older adults live alone. Unsurprisingly, significantly more older adults in deprived neighbourhoods have a low income. Another significant difference appears in the case of number of years of residence. Although older adults in both neighbourhood types have a longstanding residential relationship with the settlement in which they live, in deprived neighbourhoods many more older adults have never lived in any other settlement. This contrast could indicate that older adults in non-deprived neighbourhoods did, indeed, have more opportunities to choose a specific location in which to reside in the course of their lives.

The affective response of older adults towards the environment they live in was measured in two different ways. The first indicator was neighbourhood satisfaction. A scale '1' for

Table 1. *Background information of the older adults in deprived and non-deprived neighbourhoods.*

	Deprived	Non-deprived	Total	Cramer's V
Age (%)				
50–59	40	38	39	n.s.
60–69	29	29	29	
70–79	23	23	23	
80–89	8	10	9	
N (100%)	755	1,182	1,937	
Female (%)	51	55	54	0.04*
N (100%)	757	1,182	1,939	
With functional dependencies (%)	36	25	29	0.112***
N (100%)	757	1,182	1,939	
Income (%)				
Low	45	22	31	0.23***
High	55	78	69	
N (100%)	652	1,042	1,694	
Household composition				
Lives alone (%)	28	24	26	0.04*
N (100%)	754	1,180	1,934	
Lives with children (%)	20	18	19	n.s.
N (100%)	755	1,181	1,936	
Years of residence in current settlement (%)				
< 3 years	3	2	2	0.14***
3–10 years	7	7	7	
> 10 years < whole life	60	73	68	
Whole life	30	18	22	
N (100%)	757	1,182	1,939	

*** $p = 0.000$; * $p < 0.10$.

'very dissatisfied' to '5' for 'very satisfied' was dichotomised, distinguishing respondents who declared that they were (very) dissatisfied from the others. The second indicator was whether older adults generally felt safe in their own neighbourhood or not. Negative responses on these two variables are seen as indicators of experienced environmental stress.

The analysis started with a description of the different aspects of vulnerability. Next, logistic regression models were used to analyse the cumulative concept of vulnerability in relationship to neighbourhood satisfaction and feelings of safety. The first model analyses whether older adults living in deprived neighbourhoods who have functional dependencies are less likely to be satisfied and feel safe compared to older

adults in the same neighbourhood who are not dependent, and whether this relationship with personal vulnerability affects older adults living in non-deprived neighbourhoods. A variable is constructed in which 'having dependencies or not' is combined with 'living in a deprived or non-deprived neighbourhood'. The model controls for age, gender and household vulnerability (living alone and having a low income).

The second model analyses whether the negative affective response is even stronger when older adults living in deprived neighbourhoods not only have functional dependencies, but also live alone. Because vulnerability starts with the personal dimension (functional dependency) in the conceptual model, the

Table 2. *Vulnerability and environmental stress of older adults living in deprived and non-deprived neighbourhoods.*

	Deprived	Non-deprived	Total	Cramer's V
<i>Personal vulnerability (%)</i>				
No functional dependencies	64	75	71	0.112***
With functional dependencies	36	25	29	
<i>Older adults with functional dependencies</i>				
One dependency	53	52	52	n.s.
Two or more dependencies	47	48	48	
<i>Needs (some) help to (%):</i>				
Use the telephone	0	0	0	n.s.
Get to places not in walking distance	7	5	5	n.s.
Shop for groceries or clothes	9	6	7	n.s.
Prepare own meal	7	4	5	n.s.
Do housework	20	17	18	n.s.
To take own medicines	2	1	1	n.s.
Handle own money	6	6	6	n.s.
To eat	0	0	0	n.s.
To dress and undress	1	1	1	n.s.
Take care of appearance	0	0	0	n.s.
To walk	6	4	5	n.s.
Get in and out bed	0	0	0	n.s.
Take bath or shower	3	2	2	n.s.
Get to bathroom	14	8	10	0.113**
<i>Household vulnerability (%)</i>				
<i>Older adults with at least one functional dependency</i>				
Lives alone	32	39	35	n.s.
Does not live alone	68	61	65	
Low income	54	36	45	0.191***
Middle income	35	43	39	
High income	11	21	16	
<i>Environmental stress (%)</i>				
(Very) dissatisfied	10	2	5	0.182***
Feels unsafe	8	3	5	0.123***

*** p = 0.000; ** p < 0.50.

constructed variable for the regression analysis considers older adults without dependencies as one category, whether they live alone or not. The model controls for age, gender and household income.

Many of the respondents did not reply to the income question. Therefore, the analyses include a category 'income unknown' to prevent the loss of these respondents in relationships with the other indicators. Further, because of these missing data, it was not possible to compute a model in which income was combined with the other vulnerability dimensions.

RESULTS

Table 2 presents a description of the main dimensions of vulnerability and environmental stress. Of all the older adults, 29 per cent reported having functional dependencies, however more often in deprived than in non-deprived neighbourhoods. Six per cent of all respondents reported that they were completely unable to perform a specific activity (not shown). Almost half of the older adults who reported difficulties, cope with at least two different types of dependencies. Assistance is relatively often

Table 3. *Beta logistic regression coefficients for environmental stress with personal and environmental vulnerability.*

	Neighbourhood satisfaction B	Feelings of safety B
Age	0.02	-0.02
Man (ref. Woman)	0.00	0.30
Living alone (ref. Not alone)	-0.55**	-0.35
Income (ref. High income)		
Low income	-0.34	-0.46*
Income unknown	0.51	-0.51
Functional dependency and living in neighbourhood type (ref. No dependencies and non-deprived neighbourhood)		
Dependencies and non-deprived neighbourhood	0.14	0.23
No dependencies and deprived neighbourhood	-1.39***	-0.85***
Dependencies and deprived neighbourhood	-2.00***	-1.33***
Constant	2.96***	4.88***
Initial - 2 log likelihood	769.01	726.47
Model - 2 log likelihood	688.70	677.24
Chi ²	80.31	49.23
Degrees of freedom	8	8
Significance	0.000	0.000
Nagelkerke R ²	0.12	0.08
(N)	(1,928)	(1,919)

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Note: Model with reference category 'no dependencies and living in deprived neighbourhood' shows: (i) neighbourhood satisfaction: difference with 'dependencies and living in deprived neighbourhood' is significant at $p < 0.05$; (ii) Feelings of safety: difference with 'dependencies and living in deprived neighbourhood' is significant at $p < 0.10$.

needed for doing housework, and important mobility items such as walking and getting to the shops (see also De Klerk *et al.* 2004).

The older adults with functional dependencies combined their personal vulnerability with other vulnerable characteristics to some extent. About 35 per cent of these older adults lived alone, while 45 per cent had a low income. Seventeen per cent of the dependent older adults combined living alone with a low income. More than half of these vulnerable older adults lived in a deprived neighbourhood (not shown).

The vast majority of older adults is satisfied with and feels safe in the neighbourhood where they live in. Given the long period of residence (more than 90% in both neighbourhood types live 10 years or more in the settlement) these high levels of neighbourhood satisfaction and

feelings of safety are not surprising. As expected, however, satisfaction levels and feelings of safety are lower in deprived neighbourhoods.

Table 3 shows the combined effect of having functional dependencies and living in a deprived neighbourhood on the two indicators of environmental stress, while controlling for household resources as well as age and gender.

While no significant relationship is found between age and environmental stress and gender and environmental stress, two types of relationships between household resources and environmental stress reaches a significant level. Older adults living alone are less satisfied with their neighbourhood than older adults who do not live alone, and older adults with low incomes feel less safe than older adults with a higher income. Moreover the results show that, although in general older adults were more

Table 4. Beta logistic regression coefficients for environmental stress, with personal and household and environmental vulnerability.

	Neighbourhood satisfaction B	Feelings of safety B
Age	0.16	-0.02
Man (ref. Woman)	0.06	0.31
Income (ref. High income)		
Low income	-0.38	-0.48*
Income unknown	0.54	-0.50
Functional dependency and household member and living in neighbourhood type (ref. No dependencies and non-deprived neighbourhood)		
Dependency and not alone and non-deprived neighbourhood	0.55	1.01
Dependency and alone and non-deprived neighbourhood	-0.45	-0.72
No dependency and deprived neighbourhood	-1.42***	-0.87***
Dependency and not alone and deprived neighbourhood	-1.83***	-1.18***
Dependency and alone and deprived neighbourhood	-2.42***	-1.68***
Constant	2.93***	4.69***
Initial - 2 log likelihood	769.52	726.94
Model - 2 log likelihood	690.78	672.45
Chi ²	78.74	54.49
Degrees of freedom	9	9
Significance	0.000	0.000
Nagelkerke R ²	0.12	0.09
(N)	(1,933)	(1,924)

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Note: Model with reference category 'no dependencies and living in deprived neighbourhoods' shows: (i) neighbourhood satisfaction: difference with 'dependency and not alone and deprived neighbourhood' has not found to be significant at $p = 0.16$; difference with 'dependency and alone and deprived neighbourhood' is significant at $p < 0.01$; (ii) Feelings of safety: difference with 'dependency and not alone and deprived neighbourhood' has not found to be significant at $p = 0.34$; difference with 'dependency and alone and deprived neighbourhood' is significant at $p < 0.05$.

likely to be dissatisfied and feel unsafe if they lived in deprived neighbourhoods, this environmental stress appears to occur more frequently among older adults who have functional dependencies. This difference is significant (see the note in Table 3). In non-deprived neighbourhoods, no significant differences are found between older adults with or without dependencies. This finding might indicate that the personal vulnerability indeed affects the extent to which older adults respond emotionally to negative environmental factors found in deprived neighbourhoods.

In the next model household vulnerability (living alone) has been added to the combination of personal vulnerability and living in a

deprived or non-deprived neighbourhood (see Table 4). Although in non-deprived neighbourhoods, older adults who have functional dependencies and live alone have a lower chance of being satisfied or feeling safe compared to older adults without personal vulnerabilities, these differences have not been found to be significant. In this neighbourhood type, almost all older adults are satisfied and feel safe; even vulnerable older adults seem to 'be in place'. In contrast, in deprived neighbourhoods, older adults who have functional dependencies and live alone are least satisfied and feel most often unsafe. As the note in Table 4 indicates, it is this combination of personal and household vulnerability that matters.

DISCUSSION

The results of this study seem to support the 'environmental docility hypothesis' in which vulnerable older adults are more likely to experience negative effects from environmental deprivation. The environmental dimension of vulnerability seem to exacerbate the feelings of 'being out of place'.

Further, the results seem to support the idea of vulnerability as a multidimensional and cumulative concept. Although the older adults in this study in general are more often dissatisfied and feel unsafe in deprived neighbourhoods, this statement applies in particular to older adults who cope with functional dependencies and live alone. It is the accumulation of personal, household and environmental vulnerability that seems to result in experiences of environmental stress. This extra environmental stress was not found among older adults with personal and household vulnerabilities living in non-deprived neighbourhoods.

However, because of the small number of older adults with multiple vulnerability in this study and the fact that the ESAW sample was not developed to measure deprivation in detail, on neighbourhood level, the outcome only gives a first clue. The exact meaning of the neighbourhood in terms of supportiveness to vulnerable older adults still remains unclear.

To gain more insight into this issue, two different types of further research are required. The first type is a multi-level analysis, which needs a substantial sample of neighbourhoods with more variation in deprivation characteristics than the ESAW project could provide for, and a large sample of people in the older age groups in order to find more older adults with multiple vulnerability. The second type is a qualitative study on the impact of neighbourhood transition on the well-being of vulnerable older adults. As we have seen in the ESAW data, most older people have a longstanding relationship with the neighbourhood in which they live. These older inhabitants experienced a process of neighbourhood transition during their life course. Older people living in urban deprived neighbourhoods have experienced a deterioration of the physical structure and social climate in the neighbourhood. During their life course they have experienced the departure of familiar

co-inhabitants and the influx of several types of 'unknown others'. In deprived neighbourhoods in peripheral rural areas, the neighbourhood transition is predominantly the result of a process of selective outmigration. Analysis of neighbourhood transitions in combination with life histories of vulnerable older adults with a long period of residence can provide an in-depth understanding of the impact of the process of neighbourhood transition on the well-being of vulnerable older adults.

Note

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