Sense of Neighbourhood and Neighbourhood Safety

Age Cohorts	Older
Surveys	Survey 2
Derived Variable	NHSTSF
Definition	7-item summed score for satisfaction with neighbourhood
Source Items (Index Numbers)	NHOOD1, 2, 3, 5, 6, 8 & 11 (NGHB-001, -002-, 003,- 005, -006-, 008 & -011)
Statistical form	Continuous variable
Index Number	NGHB 016
Derived Variable	NHSFTY
Definition	2-item summed score for neighbourhood safety
Source Items (Index Numbers)	NHOOD9 & 13 (NGHB- 009 & NGHD-013)
Statistical form	Continuous variable
Index Number	NGHB 015
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Endorsed	9 January 2002

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Source Items
A number of Australian studies have investigated aspects of the neighbourhoods where people live. The Healthy Communities Survey in Tasmania asked about feelings concerning neighbours and neighbourhood, to assess the impact of neighbourhood connectedness on health and well being.[1] In that study, neighbourhood connectedness was assessed using thirteen items (Table 1), including eight items (a, b, d, e, g, j, k, l) from an earlier national survey by the Australian Institute of Family Studies (AIFS).[2]

Principal component analysis of the eight items in the AIFS survey indicated that they could be summed to yield a single "sense of community" index for each person.[2] The Healthy Communities Survey added five items (c, f, h, i, m) based on the theoretical literature concerning the link between social connectedness and health and well being. Their aggregate measure of neighbourhood satisfaction, defined as the mean of scores for the 13 items, was found to be positively correlated with quality of life.[1] However the psychometric properties of the scale items, and the validity of using these items to measure a single construct, have not been assessed. Most of the items measure similar concepts to those used in the measurement of sense of community and some items (a, b, c, e, f, k) are comparable to those used in measures of neighbourhood cohesion and the five-item social cohesion and trust subscale.[3,4]

Table 1   **13 items assessing the impact of neighbourhood connectedness, The Healthy Communities Survey, Tasmania**

NHOOD1	a	I would be really sorry if I had to move away from the people in my neighbourhood
NHOOD2	b	I have a lot in common with people in my neighbourhood
NHOOD3	c	I generally trust my neighbours to look out for my property
NHOOD4	d	People in my neighbourhood make it a difficult place to live [a]
NHOOD5	e	I am good friends with many people in this neighbourhood
NHOOD6	f	I like living where I live
NHOOD7	g	I have little to do with people in this neighbourhood [a]
NHOOD8	h	My neighbours treat me with respect
NHOOD9	i	Children are safe walking around the neighbourhood during the day
NHOOD10	j	I get involved with most local issues
NHOOD11	k	People in my neighbourhood are very willing to help each other out
NHOOD12	l	If I no longer lived here, hardly anyone around here would notice [a]
NHOOD13	m	It is safe to walk around the neighbourhood at night

[a] Negatively worded item with reversed scoring

The neighbourhood items included in the second ALSWH survey of older women (Table 1) duplicate those of the Tasmanian study, with minor differences in wording for 2 items and with the omission of the response category of not applicable.[1] Item scoring is shown below.

Positive Item Score	Negative Item Score	Response
1	5	Strongly disagree
2	4	Disagree
3	3	Neutral
4	2	Agree
5	1	Strongly agree

Scale Evaluation
Of the 9 501 women who completed the full-length version of the second survey a further 56 were excluded because their housing situation was inconsistent with assessing opinions about their neighbourhood (13 women living in a nursing home and 43 whose housing situation was unknown). Thus the evaluation of neighbourhood items was based on data from 9 445 women aged 73-78 years.

Item responses
Response frequencies, percent missing and mean scores are shown for all 13 items in Table 2, with items grouped according to the findings of the factor analysis described later. The women in the study were generally happy with where they lived, felt they were treated with respect, and had trust in their neighbours to help look out for their property. Thirty nine percent of women felt that it was safe to walk around at night. Almost one quarter of these older women had little to do with their neighbours and around one in five felt that it would not be noticed if they no longer lived there.

Factor analysis

Factor analyses were conducted on 2 equally sized groups with no missing data (complete cases; n=3 846 and n=3 831, total n=7 677) selected at random and the results compared for consistency (split sample analysis). A second factor analysis of the split samples based on the pair-wise correlation matrix for non-missing pairs of variables, rather than complete cases, included 4 723 and 4 722 cases (total n=9 445).

Results of all the factor analyses were strongly consistent and are presented for all complete cases (Table 3). Internal consistency of the 13 items was high (standardised Cronbach's alpha 0.86). Item-to-total correlations were low (0.24) for item m, intermediate for items d, i, j and l (0.38-0.42) and high (0.55-0.70) for the remaining 8 items. Three factors were identified in the factor analysis and they accounted for 57% of the variance in the responses to the thirteen items (results not shown). Items i and m were considered to comprise a neighbourhood safety factor, with high levels of communality and strong loadings, while loadings of all other items on this factor were weak. Items d, g, j and l tended to behave less consistently than other items across the various analyses, had higher cross-loadings and had the highest rates of missing data (5.4% to 7.6%). Thus, these 4 items were excluded from further analyses.

Factor loadings from a final factor analysis of nine items (a, b, c, e, f, h, i, k and m) are shown in Table 3. The minimum communality was 0.49 and item-total correlations were high (>0.58) for all satisfaction items and low for safety items. The internal consistency was high (standardised Cronbach's alpha 0.85) and the two factors accounted for 60% of the variance in the responses (47% for factor 1). Factor scores were derived from this analysis.

Table 2   Percent and mean (SD) of responses and percent missing for neighbourhood satisfaction items (n = 7 677)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Percent Missing	Mean (SD)[a]
Percent							
Sense of neighbourhood							
a Really sorry if I had to move away	4	4	28	37	26	3.7	3.8 (1.0)
b Have a lot in common	3	7	31	43	16	4.2	3.6 (0.9)
c Trust neighbours to look out for property	3	3	10	57	27	3.3	4.0 (0.8)
e Good friends with many people in neighbourhood	2	3	16	57	22	3.7	3.9 (0.8)
f Like living where I live	2	1	7	52	37	2.2	4.3 (0.7)
h Neighbours treat me with respect	1	1	7	65	25	2.6	4.2 (0.6)
k People are very willing to help each other out	2	3	19	57	19	3.8	3.9 (0.8)
Neighbourhood Safety							
i Children are safe walking around during the day	2	4	12	64	19	5.1	4.0 (0.8)
m It is safe to walk around at night	12	24	25	31	8	3.2	3.0 (1.1)
Excluded							
d People make it a difficult place to live	50	36	9	3	2	7.5	4.3 (0.9)
g I have little to do with people in this neighbourhood	20	34	22	20	3	7.6	3.5 (1.0)
l If I no longer lived here, hardly anyone would notice	15	45	21	15	4	5.4	3.5 (1.0)
j I get involved with most local issues	5	19	41	28	7	7.0	3.1 (1.0)

Table 3   Factors analysis for women with responses to 9 items (n = 8 177)

		Correlation With Total	Communality	Factor Loadings	
				Sense of neighbourhood	Neighbourhood Safety
b	Lot in common	0.66	0.65	**0.80**	0.05
e	Good friends	0.66	0.64	**0.79**	0.11
c	Neighbours look out for my property	0.63	0.59	**0.76**	0.09
a	Sorry if I had to move away	0.58	0.54	**0.74**	0.04
k	Willing to help each other out	0.64	0.57	**0.71**	0.26
h	Treat me with respect	0.61	0.54	**0.69**	0.25
f	I like living where I live	0.58	0.49	**0.68**	0.18
m	Safe to walk at night	0.24	0.71	0.02	**0.84**
i	Children safe to walk during the day	0.43	0.66	0.26	**0.77**

Derived Variables

Scores and Missing items

Factor scores for sense of neighbourhood and neighbourhood safety were calculated for 8 177 women (87%) with no missing items in the final factor analysis. A summed sense of neighbourhood score was based on the 7 items loading most strongly onto the sense of neighbourhood factor. Allowing mean substitution for up to two items, the summed score was calculated for 9 171 women (97%). As the summed score resulted in fewer missing values than the factor score and as the correlation between the summed and factor scores was 0.97, the summed score was chosen for further analysis. The summed sense of neighbourhood score had a mean of 27.6 with standard deviation 4.5.

A summed neighbourhood safety score was calculated for the 8 835 women responding to items i and m. This score correlated highly with the neighbourhood safety factor score (Pearson correlation coefficient 0.98) and hence was chosen for further analysis. The summed neighbourhood safety score had a mean of 6.9 with a standard deviation of 1.6.

Construct Validity

It was hypothesised that neighbourhood scores would be positively related to physical and mental health, physical activity, social support and years living in the present home. Similarly, a negative correlation with stress was postulated. A null association was proposed between neighbourhood scores and height.

The sense of neighbourhood score was positively but weakly correlated with physical and mental health and more strongly correlated with social support; it was negatively correlated with mean stress; and not significantly correlated with height (Table 4). The size and direction of correlations with neighbourhood safety scores were similar except that social support had weaker correlations with safety (Table 4).

Table 4   Construct validity of the summed scores for sense of neighbourhood and neighbourhood safety among women aged 73-78 years.

	Sense of neighbourhood (n = 9 171[a])		Neighbourhood Safety (n = 8 835[a])	
	Correlation	*p-value*	*Correlation*	*p-value*
SF-36 Physical Health Component	0.07	< 0.001	0.08	<0.001
SF-36 Mental Health Component	0.15	< 0.001	0.11	< 0.001
Stress	-0.14	< 0.001	-0.12	< 0.001
Social support	0.33	< 0.001	0.14	< 0.001
Height	Less than –0.01	0.95	0.02	0.098
	Mean[b] (95% CI)	*p-value*	*Mean[b] (95% CI)*	*p-value*
Years in present home		<0.001		0.537
One year or less	26.8 (26.4, 27.2)		6.9 (6.7, 7.0)	
2-5 years	26.8 (26.6, 27.1)		6.9 (6.8, 7.0)	
6-10 years	27.3 (27.0, 27.5)		6.9 (6.8, 7.0)	
11-20 years	27.7 (27.5, 27.9)		7.0 (6.9, 7.0)	
21 or more years	28.1 (27.9, 28.2)		6.9 (6.9, 7.0)	
Physical activity		<0.001		<0.001
None/Sedentary	27.2 (27.0,27.4)		6.9 (6.8,6.9)	
Low	27.6 (27.5,27.8)		6.9 (6.8,7.0)	
Moderate	28.0 (27.8,28.2)		7.0 (6.9,7.1)	
High	28.0 (27.8,28.2)		7.1 (7.0,7.2)	

[a] Missing data for up to 136 for sense of neighbourhood and 128 for neighbourhood safety
[b] Means not significantly different from one another are joined by a line

Sense of neighbourhood scores increased with years living in the present home, with women living in their home for 21 years or more having higher scores than all other women (Table 4). Women reporting no physical activity or a sedentary lifestyle had lower sense of neighbourhood scores than all other women (Table 4). While there were no significant differences in mean neighbourhood safety scores according to years living in the present home, women reporting high levels of physical activity reported a higher mean safety score than women leading a sedentary lifestyle or with low levels of physical activity (Table 4).

Women who were separated and divorced had significantly lower mean sense of neighbourhood scores than women who were married, widowed and never married (Table 5). Those living alone had slightly higher sense of neighbourhood scores but lower safety scores. Sense of neighbourhood scores increased with ease of managing on present level of income and decreasing urbanisation (Table 5). Neighbourhood safety scores were highest among married women and women more able to manage on their income. Safety scores increased with decreasing urbanisation (Table 5).

Table 5   Mean sense of neighbourhood and neighbourhood safety scores among women aged 73-78 years with various demographic characteristics.

	Sense of neighbourhood (n = 9 171[a])		Neighbourhood Safety (n = 8 835[a])	
	Mean[b] (95% CI)	p-value	Mean[b] (95% CI)	p-value
Marital status				
Married/defacto	27.6 (27.4, 27.7)	<0.001	7.1 (7.0, 7.1)	<0.001
Widowed	27.8 (27.6, 27.9)		6.8 (6.7, 6.9)	
Never married	27.8 (27.3, 28.4)		6.7 (6.5, 6.9)	
Separated/divorced	26.6 (26.2, 27.0)		6.6 (6.5, 6.8)	
Living Alone				
Yes	27.8 (27.7, 28.0)	<0.001	6.8 (6.7, 6.8)	<0.001
No	27.5 (27.4, 27.6)		7.0 (7.0, 7.1)	
Ability to manage on income				
Impossible/always difficult	26.1 (25.8, 26.5)	<0.001	6.5 (6.4, 6.7)	<0.001
Difficult some of the time	27.3 (27.1, 27.5)		6.7 (6.7, 6.8)	
Not too bad	27.5 (27.4, 27.7)		6.9 (6.9, 7.0)	
Easy	28.3 (28.1, 28.5)		7.2 (7.2, 7.3)	
Area of residence				
Urban	27.2 (27.1, 27.4)	<0.001	6.6 (6.5, 6.6)	<0.001
Large rural	27.6 (27.3, 27.9)		6.8 (6.7, 6.9)	
Small rural	27.7 (27.5, 28.0)		7.0 (6.9, 7.1)	
Other rural / remote	28.1 (27.9, 28.2)		7.5 (7.4, 7.5)	

[a] Missing data for up to 168 for sense of neighbourhood and 157 for neighbourhood safety
[b] Means not significantly different from one another are joined by a line

The SAS code defining sense of neighbourhood and neighbourhood safety at Survey 2 is:

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array item{7} o2q36a o2q36b o2q36c o2q36e o2q36f o2q36h o2q36k ;

if o2survey = 1 then do;
     if o2q33 in (5,.) then o2NHstf = . ;
else if nmiss(of item{*})in (0,1,2) then do ;
    o2NHstf = sum(of item{*})+(nmiss(of item{*})*mean(of item{*}));
    end ;
else o2NHstf = . ;

if (o2q36i and o2q36m) then O2NHsfty = sum (o2q36i,o2q36m ) ;
else O2NHsfty = . ;
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References

1. Department of Health and Human Services. *Health and Wellbeing in Tasmania: First results of the Healthy Communities Survey 1998*. Tasmania: Department of Health and Human Services, Health and Wellbeing Outcomes Unit; 1999

2. Brownlee, H. Neighbourhood and local services. In McDonald P (Ed.), *The Australian Living Standards Study: Berwick Report, Part 1: The Household Survey.* Melbourne: Australian Institute of Family Studies; 1993

3. Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science* 1997;*227:*918-924

4. Lochner K, Kawachi I, Kennedy BP. Social capital: a guide to its measurement. *Health & Place* 1999;5:259-270