# Health, Work, and Retirement Survey

Working paper.

# Social networks and their effects on health over time: A report from 2006 and 2008 HWR data waves

Christine Stephens and Jack Noone.

A research Collaboration between

## Introduction

Social networks and the social support that they offer have been shown to exert significant effects on the health and wellbeing of older persons (Berkman, 2000; Unger, McAvay, Bruce, Berkman, & Seeman, 1999). There is strong support from decades of research for the effects of perceived social support and engagement with social networks on both physical and mental health (e.g., Antonucci, 2001; Antonucci, Fuhrer, & Dartigues, 1997; Berkman, Glass, Brisette & Seeman, 2000; Giles, Glonek, Luszcz, & Andrews, 2005; Zunzunegui et al., 2005). Berkman et al. (2000) have proposed a sequential model of social networks and health to suggest that the broader social context has important effects on people's social networks ('upstream' effects) and must be taken into account. Social networks in turn have 'downstream' effects on health through pathways such as social support.

Social networks are understood in the Berkman et al. (2000) model as the social structures that potentially provide support to individuals. Defined as the web of relationships surrounding the individual, they include a complex of characteristics which may include differences in structure such as size, composition, and distance and differences in characteristics of ties such as frequency and intimacy.

The broader social context within which people interact socially and form such networks is an important consideration. Berkman et al. (2000) note that this been largely neglected, although there is some evidence for the influence of social factors on networks. Zunzenugi et al (2005) used cross country comparisons to show that there are cultural differences in the ways in which family based networks may protect against disability

incidence. Within countries, social differences such as gender, age, religion, educational level, ethnicity, and socioeconomic status (SES) have been found to influence the personal networks of older people (Ertel, Glymour, & Berkman, 2009; Litwin and Shiovitz-Ezra, 2011). In a health related context, Fraser and Rodgers (2009) tested the influence of social status, income and marriage on the social networks, and perceived social support, of heart patients to show that higher social status and income were related to larger diverse networks and more social support.

In regard to social support, the Berkman et al. (2000) model suggests a number of possible aspects of support which vary according to the type of social network in which a person is embedded. Perception of support is an important pathway factor, since not all social networks provide positive support (Rook, 1997). Weiss (1973) identified and described six categories of people's perceptions of the function of their social relationships. Cutrona, Russell & Rose (1986) describe this 'social provisions' framework as perceptions of: attachment (emotional closeness and security); social integration (belonging to a group of people who share common interests and recreational activities); reassurance of worth (acknowledgment of competence and skill); reliable alliance (one can count on others for assistance); guidance (advice and information); and opportunity for nurturance (responsibility for the well-being of another). This framework of perceived social support aligns closely with elements of the pathways to health 'downstream' from social networks which are specifically highlighted by Berkman et al., in their model.

According to Berkman et al (2000) the pathways such as social support have their effects on mental and physical health through a variety of factors which include direct physiological stress responses, psychological states and traits including self-esteem or self-

efficacy, health-damaging behaviors such as smoking or alcohol use, and health promoting behavior such as appropriate health service utilization, medical adherence, and exercise. Social support may also enable direct access to physical resources such as transport to enable beneficial participation. These pathways have direct effects on both physical health including disability levels and disease states, and on mental health which includes mood states and depression. Both physical and mental health outcomes have been the focus of research in this area as cited above.

Social engagement in networks is understood as a promising focus of intervention and support for the wellbeing of older adults (Bath & Deeg, 2005; Ertel et al., 2009). Berkman et al's (2000) model provides a structured basis for considering the relationships between a confusing array of factors in the social relationships and health area of research, while including the wider social context. Recent cross-sectional research using this model has shown that higher social status and income are related to larger, more diverse networks and more social support (Fraser & Rodgers, 2009). Our first cross sectional study (Stephens, Alpass, Towers, & Stevenson, 2011) showed that socioeconomic status, ethnicity, age and gender contribute to social network type, which affects perceived social support and loneliness, and mental and physical health. Here we use two waves of the HWR study to explore the relationships between social context, social network engagement, and social support on health across time.

# Method

## Participants

The Health, Work, and Retirement study surveyed a representative sample of older New Zealanders to examine the factors that predict well-being in later life. In 2006, 6,662 participants aged 55 to 70 completed the first postal questionnaire survey (response rate 54%; see Dulin, Stephens, Hill, Stevenson, & Alpass, 2011 for sample and procedural details), and 2,493 of those agreed to participate in the second wave in 2008. Of this sample, 239 with missing data which could not be estimated were removed leaving a final sample size of 2,282.  T tests showed that there was a tendency for those who did not volunteer for the second survey, to report poorer health, lower levels of education, lower levels of social support, and lower levels of economic living standards.  All missing data for these variables were estimated using Full Information Maximum Likelihood techniques (Enders & Bandalos, 2001).

## Measures

All study variables were measured in 2006 (T1) and measures of health from 2008 (T2) were included.

*Health outcomes.* Health at T2 was measured with the SF-36 V2 (Ware, Kosinsky & Dewey, 2000). Recommended SF-36 scoring techniques were used to calculate subscale scores for Physical Functioning (10 items, e.g., Lifting or carrying groceries), Physical Role Limitations (4 items, e.g., Accomplished less than you would like), Bodily Pain (2 items, e.g., How much pain have you had during the past four weeks?), Emotional Role Limitations (3 items, e.g., Didn't do work or other activities as carefully as usual), and

Mental Health (5 items, e.g., Did you feel worn out?) The first three subscale scores were included as indicators of physical health and the last two scores were included as indicators of mental health. Mean subscale scores ranged from 67.46 (SD= 24.90) to 83.84 (SD=24.91) at T1, and from 69.70 (SD=24.71) to 85.34 (SD=21.61) at T2. The reduced, five-dimension, Cronbach's alpha coefficients for the physical and mental health subscales were .86 and .76 respectively.

*Social networks.* The social network measure was an adaptation of Wenger's (1994) Practitioner Assessment of Network Type (PANT). Initial correlations showed that only one sub-scale, 'perceived level of contact' was related to social context and support variables and only these items were used in the analysis. Four dichotomous items (alpha =.54) assessed perception of regular contact with family (M=1.92, *SD*=0.27) and friends (M=1.89, *SD*=0.31), participation in family activities (M=1.75, *SD*=0.43), and eating with family or friends regularly (M=1.68, *SD*=.47). Higher scores reflect greater perceived contact.

*Social support.* Cutrona and Russell's (1987) Social Provisions Scale (SPS) includes 24 items (alpha = .85-.92) to assess six aspects of perceived social support (e.g. Opportunity for Nurturance, Attachment). Scores on the items in each subscale (e.g., There are people who depend on me for help, I lack a feeling of intimacy with another person) were summed (range 4 – 16). Mean subscale scores ranged from 12.56 (*SD*=2.22) to 13.5 (*SD*=2.15). Higher scores reflect higher levels of perceived social support.

*Economic Living Standards Index (ELSI).* The ELSI short form was chosen as a proxy for SES due to low levels of missing data and high correlations with household income (Jensen, Sathiyandra, & Matangi-Want, 2007). This index assesses levels of economic and social deprivation relating to four subscales: restrictions in ownership (7 items e.g., telephone,

personal computer, $M$=6.69, $SD$=0.74, range = 0-7; restrictions in social participation due to finances (7 items e.g., can afford to have a night out at least once a month, $M$=6.19, $SD$=1.34, range = 0-7); economising (8 items e.g., stayed in bed longer to save on heating costs, $M$=12.73, $SD$=3.56, range = 0-16); and 3 self-rated indicators of living standards (e.g., satisfaction with current material standard of living, M=6.8, SD=2.17, range = 0 - 11). Summed scores for each of the four subscales of the ELSI were included. Alpha for the 25 items was .83 and .75 for the four subscales. Higher scores corresponded to more comfortable economic living standards.

*Age* ranged from 54 to 75 years of age ($M = 61.10$, $SD = 4.55$). *Gender* was an observed dichotomous variable (1=male, 2=female). Approximately 53.2 % of the sample was female. *Ethnicity* was measured with an observed dichotomous variables based on New Zealand Statistics census categories. Participants who identified as Māori or part-Māori were categorised as "Māori" (2) compared to those who identified as only "European" (1). *Education.* A 9-point nominal scale indicated highest formal educational qualification. This scale was collapsed into two dichotomous variables reflecting either no formal secondary schooling (30.9%) versus a secondary qualification or higher (69.1%) or a tertiary qualification (46.6%) versus a secondary qualification or lower (53.4%).

**Results**

| | Physical Health | Mental Health | ELSI | Social Support | Social Engagement |
|---|---|---|---|---|---|
| Table 1 *Pearson's r correlations between mental and physical health in 2008, with social support, social engagement and sex and ethnicity variables in 2006.* | | | | | |
| Mental Health | **0.79** | | | | |
| ELSI | **0.47** | **0.51** | | | |
| Social Support | **0.19** | **0.20** | **0.37** | | |
| Social Engagement | **0.11** | **0.11** | **0.26** | **0.46** | |
| Sex | 0 | 0 | -0.11 | 0.12 | **0.16** |
| Ethnicity | **-0.18** | **-0.25** | **-0.20** | **-0.11** | **0.16** |

All correlations in bold type in Table 1 are significant at $p<.001$. This is an effect of the large sample size but it is useful to compare the size of the correlation coefficients.

- Mental and physical health are very strongly correlated ($r =.79$) as expected.

- The next strongest relationships are between ELSI (a measure of living standards) and both physical ($r =.47$) and mental ($r =.51$) health. ELSI is also moderately correlated with perceptions of social support and less strongly with social engagement.

- Social engagement is moderately strongly correlated with perceptions of social support.

**Discussion**

These data provide support for the model prediction that social network characteristics and social support will have an effect on health.  Such understandings have implications for any interventions to develop supportive networks for older people in the community, and for considerations of the kinds of social interaction that might provide social support for those with particular health or disability needs.

The results highlight the importance of considering the broader social context of social networks and social participation, particularly socioeconomic inequalities which affect social networks and social support directly.  Our results show that those with lower economic living standards report networks that offer less social engagement and lower perceptions of social support. These are indications of future health issues for an ageing population and signal areas for focussed investigation and concern.

In addition, the correlations highlight a potentially important pathway between the social engagement aspects of social networks and social support.  These correlations showed that items tapping 'perceived level of contact' were most closely related to social context and social support. This is in accord with recent work (Golden et al., 2009) which demonstrated the health effects of the 'social engagement' aspects of the PANT social network measure.  Together, these results suggest that level of contact is an important aspect of social networks in terms of provision of wellbeing and that developing assessment of the actual social contact aspects of network involvement will be fruitful.

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