Demographic differences in the association between social networks and self-rated health in later life

Results from the Social Networks and Ageing Project

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Social networks and self-rated health

Benefits of social networks for health and wellbeing are well-established, including for older populations (e.g., Bowling and Grundy 1998).

Self-rated health is associated with objective health and with mortality (e.g., Idler and Benyamini 1997).

Social network characteristics are associated with self-rated health (e.g., Fiori and Jager 2012). This evidence is varied – depends on network type (e.g., family, neighbours) and social context (e.g., ethnic group, nationality).

Demographic dimensions of the SN-SRH association have not been systematically investigated.
Aim

To examine the social network predictors of self-rated health of the older population:

• for different demographic groups within the older population
• also contrasting family-based, friend-based and group-based social network characteristics
Social network concepts

• **Social network**: web of social relationships that surround an individual; defined by
  
  – network structure: **nodes** – number, boundedness, range, homogeneity
  
  – characteristics of **ties**: frequency of interaction, duration, reciprocity, intimacy

• **Social support**: emotional support, instrumental support, appraisal support, and informational support (Berkman et al 2000, Thost 1995, House 1981).
Analytical framework linking social networks and health (Berkman et al 2000)

Social structural conditions → Social network → Social network function → Pathway
Analytical framework linking social networks and health (Berkman et al 2000)
Data source: SNAP survey 2010/11

- Social Networks and Ageing Project (ARC/NSA)
- Surveys: SNAP1 – 2010/11; SNAP2 – 2012
- Study population: NSA members aged 50-89
- Stratified by age, sex and method (online/postal)
- Response rates:
  - online 11.4%; postal 39.4%; overall 17.0%
- Sample size = 2,122
- Unweighted results
Data - variables

• Family-based vs Friend-based vs Group-based social activity
  – Face to face - in last four weeks
  – Number of people/ occasions/ duration

• Family-based and friend-based social support
  – Instrumental
  – Emotional

• Personal characteristics

• Health: Self-rated Health, objective health-related variables
Analytical framework linking social networks and health (Berkman et al 2000)

Social structural conditions

Social network

Social network function

Pathway

Norms and values

Socio-economic factors

Network structure

Characteristics of ties

Social support

Social influence

Social engagement

Health behaviours

Psychological

Physiological
Analytical framework linking social networks and health (Berkman et al 2000)

- Social structural conditions
- Social network
- Social network function
- Pathway

- Norms and values
- Socio-economic factors
- Network structure
- Characteristics of ties
- Social support
- Social influence
- Social engagement
- Health behaviours
- Psychological
- Physiological
Analytical framework for the study (based on Berkman et al 2000)

Social structural conditions

Social network

Social network function

Pathway

Demographic groups:
- Sex
- Age
- Partnership

Size & frequency:
- Family-based
- Friend-based
- Group-based

Duration:

Instrumental support

Emotional support

Health behaviours
- Psychological
- Physiological
DEMOGRAPHIC GROUPS
## Demographic characteristics of the sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>42</td>
</tr>
<tr>
<td>Female</td>
<td>58</td>
</tr>
<tr>
<td><strong>Relationship status</strong></td>
<td></td>
</tr>
<tr>
<td>Partnered</td>
<td>73</td>
</tr>
<tr>
<td>Unpartnered</td>
<td>27</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td></td>
</tr>
<tr>
<td>50-59 years</td>
<td>27</td>
</tr>
<tr>
<td>60-69 years</td>
<td>46</td>
</tr>
<tr>
<td>70-89 years</td>
<td>28</td>
</tr>
</tbody>
</table>
Demographic groups

Partnered

Unpartnered

50-59
60-69
70 and over

Number

400 300 200 100 0 100 200 300 400

400 300 200 100 0 100 200 300 400

Males
Females
Dependent variable

SELF-RATED HEALTH
BY DEMOGRAPHIC GROUP
% fair/poor SRH by demographic group

- All: 14%
- Males: 15%
- Females: 13%
- 50-59: 13%
- 60-69: 11%
- 70-89: 20%
- Partnered: 13%
- Unpartnered: 16%
SELF-RATED HEALTH
BY SOCIAL NETWORK VARIABLES
BY DEMOGRAPHIC GROUP
% fair/poor SRH by family- & friend-based network structure by demographic group

Number with whom respondent had personal contact + occasions in previous 4 weeks

- **Family**
- **Friends**
% fair/poor SRH by family- & friend-based network structure by demographic group

Number with whom respondent had personal contact + occasions in previous 4 weeks

- **Males**
- **Females**
- **Partnered**
- **Unpartnered**
- **50-59**
- **60-69**
- **70-89**

Legend:
- Gray: Family
- Light Gray: Friends

SNAP: Social Networks & Ageing Project
% fair/poor SRH by family & friend
instrumental support by demographic group

Number who assisted respondent to do something practical in previous 4 weeks

- Males
- Females
- Partnered
- Unpartnered
- Family
- Friends

Demographic groups:
- 50-59
- 60-69
- 70-89

SNAP: Social Networks & Ageing Research
CEPAR: ARC Centre of Excellence in Population Ageing Research
% fair/poor SRH by family & friend emotional support by demographic group

Number of people respondent confided in in previous 4 weeks

- Family
- Friends

**Males**

<table>
<thead>
<tr>
<th>Number of People</th>
<th>0</th>
<th>1</th>
<th>2-3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

**Females**

<table>
<thead>
<tr>
<th>Number of People</th>
<th>0</th>
<th>1</th>
<th>2-3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>5</td>
<td>15</td>
<td>20</td>
<td>5</td>
</tr>
</tbody>
</table>

**Partnered**

<table>
<thead>
<tr>
<th>Number of People</th>
<th>0</th>
<th>1</th>
<th>2-3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

**Unpartnered**

<table>
<thead>
<tr>
<th>Number of People</th>
<th>0</th>
<th>1</th>
<th>2-3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>5</td>
<td>15</td>
<td>20</td>
<td>5</td>
</tr>
</tbody>
</table>
% fair/poor SRH by **group activity** by demographic group

Hours participated in group activities in previous 4 weeks
ANALYSIS
BY DEMOGRAPHIC GROUP
Method: Logistic regression

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Self-rated health (SRH)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 = Fair, poor</td>
</tr>
<tr>
<td></td>
<td>0 = Excellent, very good, good</td>
</tr>
</tbody>
</table>
Control variables – sociodemographic

• Sex

• Age in years (continuous)

• Partnership status (partnered, unpartnered)
  – Partnered includes “in a relationship but not living together”

• Level of educational attainment

• Satisfaction with standard of living
  – Measured by respondent agreement with statement “I am comfortable with my standard of living”, 5-point scale ranging from strongly disagree to strongly agree
Control variables – health-related

• The study focuses on the ‘more subjective’ aspects of SRH.

• ‘Objective’ health is taken into account by three variables:
  1. How often health or disability restricts social activities with family or friends (continuous)
  2. Mental health (continuous) Measured using the Mental Health Index (MHI-5) from the 36-item Short Form Health Survey (SF-36)
Control variables – Future time perspective

3. Future time perspective (continuous) – sense that time is limited. Measured by summing responses to selected items from the Future Time Perspective Scale (Carstensen and Lang 1996):

– “Many opportunities await me in the future”
– “Most of my life still lies ahead of me”
– “As I get older, I begin to experience that time is limited”
– “There is plenty of time left in my life to make new plans”
– “My future seems infinite to me”
– “I have the sense that time is running out”
# Effects of control variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>All</th>
<th>M</th>
<th>F</th>
<th>P</th>
<th>NP</th>
<th>50s</th>
<th>60s</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing age</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower level of education</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More dissatisfied with standard of living</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>Disability limits social activities</td>
<td>***</td>
<td>***</td>
<td>*</td>
<td>***</td>
<td></td>
<td>*</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Mental health (MHI-5)</td>
<td>***</td>
<td>*</td>
<td>**</td>
<td>***</td>
<td></td>
<td>**</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>Disability # mental health</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future time perspective</td>
<td>**</td>
<td>**</td>
<td></td>
<td>**</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05, ** p<0.01, *** p<0.001

‘Beneficial’ to SRH/‘Detrimental’ to SRH
## Odds ratios – family-based network

<table>
<thead>
<tr>
<th>Variable</th>
<th>All</th>
<th>M</th>
<th>F</th>
<th>P</th>
<th>NP</th>
<th>50s</th>
<th>60s</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network (strength)</strong></td>
<td>0.9</td>
<td>1.0</td>
<td>0.8</td>
<td>1.1</td>
<td>0.7*</td>
<td>1.2</td>
<td>0.8</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Network # disability</strong></td>
<td>1.0*</td>
<td>1.0</td>
<td>1.1*</td>
<td>1.0</td>
<td>1.1**</td>
<td>1.0</td>
<td>1.1</td>
<td>1.1**</td>
</tr>
</tbody>
</table>

### Instrumental support: Assisted to do something practical (ref 0-1)

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>by 2-3 family members</td>
<td>0.8</td>
<td>0.4*</td>
<td>1.3</td>
<td>0.6</td>
<td>1.4</td>
<td>1.7</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>by 4+ family members</td>
<td>1.2</td>
<td>1.3</td>
<td>1.3</td>
<td>1.1</td>
<td>0.8</td>
<td>4.1*</td>
<td>0.1*</td>
<td>0.7</td>
</tr>
</tbody>
</table>

### Emotional support: Confided in (ref 0-1)

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3 family members</td>
<td>0.9</td>
<td>1.1</td>
<td>0.7</td>
<td>1.1</td>
<td>0.9</td>
<td>0.5</td>
<td>0.8</td>
<td>1.6</td>
</tr>
<tr>
<td>4+ family members</td>
<td>0.9</td>
<td>1.1</td>
<td>0.8</td>
<td>0.9</td>
<td>0.8</td>
<td>0.3</td>
<td>2.1</td>
<td>3.0</td>
</tr>
</tbody>
</table>

*p<0.05, ** p<0.01, *** p<0.001

‘Beneficial’ to SRH/‘Detrimental’ to SRH
Average marginal effects – family-based network by disability
# Odds ratios – friend-based network

<table>
<thead>
<tr>
<th>Variable</th>
<th>All</th>
<th>M</th>
<th>F</th>
<th>P</th>
<th>NP</th>
<th>50s</th>
<th>60s</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network (strength)</td>
<td>1.1</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.8</td>
<td>1.1</td>
<td>1.6*</td>
</tr>
<tr>
<td>Network # disability</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.1*</td>
<td>1.0</td>
<td>0.9*</td>
</tr>
</tbody>
</table>

**Instrumental support**: Assisted to do something practical (ref 0-1)

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>M</th>
<th>F</th>
<th>P</th>
<th>NP</th>
<th>50s</th>
<th>60s</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td>by 2-3 friends</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8</td>
<td>1.2</td>
<td>0.4</td>
<td>1.1</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>by 4+ friends</td>
<td>1.0</td>
<td>0.9</td>
<td>1.4</td>
<td>1.6</td>
<td>0.8</td>
<td>1.6</td>
<td>2.2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Emotional support**: Confided in (ref 0-1)

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>M</th>
<th>F</th>
<th>P</th>
<th>NP</th>
<th>50s</th>
<th>60s</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3 friends</td>
<td>0.7</td>
<td>0.4*</td>
<td>0.9</td>
<td>0.7</td>
<td>0.7</td>
<td>0.4</td>
<td>0.8</td>
<td>0.5</td>
</tr>
<tr>
<td>4+ friends</td>
<td>1.1</td>
<td>0.5</td>
<td>1.5</td>
<td>0.9</td>
<td>1.9</td>
<td>0.2</td>
<td>1.5</td>
<td>1.4</td>
</tr>
</tbody>
</table>

*p<0.05, ** p<0.01, *** p<0.001

‘Beneficial’ to SRH/‘Detrimental’ to SRH
Average marginal effects – friend-based network by disability

All

Partnered

50-59

Males

Unpartnered

60-69

Females

70-89

hlth1

Unpartnered

All

Partnered

60-69

Females

70-89

hlth1

Unpartnered

All

Partnered

60-69

Females

70-89

hlth1

Unpartnered
## Odds ratios – group-based network

<table>
<thead>
<tr>
<th>Variable</th>
<th>All</th>
<th>M</th>
<th>F</th>
<th>P</th>
<th>NP</th>
<th>50s</th>
<th>60s</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent in group activities (ref &lt;1 hr)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 hrs</td>
<td>0.7</td>
<td>0.6</td>
<td>0.8</td>
<td>0.6</td>
<td>1.0</td>
<td>0.7</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>5-10 hrs</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.5*</td>
<td>1.0</td>
<td>0.2*</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>10-20 hrs</td>
<td>0.5</td>
<td>0.4</td>
<td>0.6</td>
<td>0.4*</td>
<td>1.0</td>
<td>0.6</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>21 hrs or more</td>
<td>0.5</td>
<td>0.2*</td>
<td>0.7</td>
<td>0.5</td>
<td>0.4</td>
<td>1.1</td>
<td>0.1*</td>
<td>0.4</td>
</tr>
</tbody>
</table>

*p<0.05, ** p<0.01, *** p<0.001

‘Beneficial’ to SRH/‘Detrimental’ to SRH
SUMMARY AND CONCLUSION

BY DEMOGRAPHIC GROUP
Summary 1

Social network–SRH models differ by demographic group

• Males - lower odds of fair/poor SRH:
  – **Instrumental** support from family
  – **Emotional** support from friends
  – Participate more in **group activities** (21+ hrs in 4 weeks)

• Females – no significant main effects
  – Interaction: Lower odds of fair/poor SRH associated with **family** network are increased at **high levels of disability**
Summary 2

Social network–SRH models differ by demographic group

• Partnered –
  – No significant family or friend network main effects
  – Lower odds if participate more in group activities (5-10 and 10-20 hrs)

• Unpartnered - lower odds of fair/poor SRH
  – Family network strength
  – Interaction: .... but odds increased at high levels of disability
Summary 3
Social network–SRH models differ by demographic group

• 50-59 - higher odds of fair/poor SRH:
  – **Instrumental** support (highest level) from family
  – Interaction: Lower odds of fair/poor SRH associated with network strength **friends** are increased at **high levels of disability**
  – BUT lower odds if participate more in **group activities** (5-10 hrs)

• 60-69 – lower odds of fair/poor SRH:
  – **Instrumental** support (highest level) from family
  – Participate more in **group activities** (21+ hrs)

• 70-89 – network strength effects:
  – Interaction: Lower odds of fair/poor SRH associated with **family network** are increased at **high levels of disability**
  – Main effect & Interaction: Higher odds of fair/poor SRH associated with **friend network** are reduced at **high levels of disability**
Conclusion

• Differences exist among demographic groups wrt the predictive effect of social network structures and functions on SRH after adjusting for objective health

• Overall model (no significant main effects) masks differences among groups

• Importance of family/friend/group breakdown

• Group activity is universally beneficial to SRH

• Policy implications – e.g., group activity, men’s groups/sheds

• Further investigation needed – larger sample
Acknowledgements

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