

The Friendship Scale: Development and properties

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ACKNOWLEDGMENTS

The Health Economics Unit of the CHPE is supported by Monash University.

The Program Evaluation Unit of the CHPE is supported by The University of Melbourne.

Both units obtain supplementary funding through national competitive grants and contract research.

The research described in this paper is made possible through the support of these bodies.

AUTHOR ACKNOWLEDGMENTS

We would like to thank Ms Marianne Shearer, from the Whitehorse Division of General Practice, for her support during the development of this scale, Ms Erin Hawthorne for patiently collecting much of the data and for doing the data entry. We would also like to thank the many patients who completed the questionnaire at a time when they were feeling ill.

Ethics approval was by the Ethics Committee at The University of Melbourne within the context of a broader survey of the health status of patients attending general practitioner clinics in the Whitehorse Division of General Practice.

Dr Hawthorne's position at The University of Melbourne is funded by the Victorian Consortium for Public Health.

Table of Contents

1	Introduction.....	1
1.1	Defining social isolation and literature review of its components and correlates.....	1
1.2	Construction of the friendship scale.....	3
1.3	Scoring the friendship scale.....	4
2	Psychometric properties of the friendship scale	4
2.1	Item and scale examination	4
2.2	The internal structure of the friendship scale.....	7
2.3	Validation of the friendship scale	7
3	Discussion	13
	References.....	15
	Appendix 1: The Friendship Scale.....	18

List of Tables

Table 1	Item data distribution.....	5
Table 2	Correlations between items.....	6
Table 3	The internal structure of the friendship scale.....	7
Table 4	Friendship scale scores by selected demographic indicators.....	10
Table 5	Friendship scale scores by selected health status indicators.....	12

List of Figures

Figure 1	Friendship scale distribution of scores.....	6
Figure 2	Age and friendship scale scores.....	9
Figure 3	Mental health and friendship scale scores.....	11
Figure 4	Physical health and friendship scale scores.....	12
Figure 5	Predicted GP visits by FS score.....	15

The Friendship Scale: Development and Properties

1 Introduction

Social isolation is a critical factor in the determination of a person's health status and self-reported health-related quality of life. It is of concern to those responsible for the provision of health care services; a recent study revealed that loneliness was significantly associated with the frequency of general practice consultations (Ellaway, Wood et al. 1999). It is widely believed that where people are socially isolated they suffer a worse health status and have a corresponding higher consumption of health care resources. There is also some evidence suggesting a link between social isolation and dementia (Fratiglioni, Wang et al. 2000).

The Centre for Health Program Evaluation was commissioned by the Whitehorse Division of General Practice to conduct a survey of the health status of patients attending their general practitioners (GPs). From a similar survey conducted in 1998 and from general anecdotal evidence, the staff of the Division were aware that many GPs were reporting social isolation as a concern. It was therefore determined that the health status survey should include a measure of social isolation to quantify the extent to which the anecdotal evidence was a reflection of a widespread issue across the Division.

1.1 Defining social isolation and literature review of its components and correlates

Social isolation is defined here as the opposite of social support, which is generally defined as the availability of significant others a person interrelates with, trusts, and to whom an individual can turn in time of crisis. Weiss conceptualised social support as providing for social integration, nurturing, alliance and guidance as well as providing worth and intimacy (Weiss 1974). The literature, generally, provides some support for this model (Russell 1982; Russell, Cutrona et al. 1984; Cutrona 1986).

Under our definition, social isolation would be absence of these supports and contacts. Generally there are perceived to be four inter-related concepts defining social isolation: being alone (ie. the amount of time spent alone), living alone (ie. a lack of significant other), social isolation (as defined by low levels of social contact with others) and loneliness (the negative feelings held by individuals about their levels of social interaction) (Victor, Bond et al. 2000). The terms are often used inter-changeably although conceptually, as suggested above, there are important differences between them.

Although loneliness is conceptually different from social isolation (a person may be socially isolated yet not feel lonely), it is usually defined as the loss or absence of relationships. As such it is probably a sub-set of social isolation dealing with the absence of particular relationships (friend, family, partner). Thus the UCLA Loneliness Scale measures the extent, defined by frequency, to which a person perceives they are in relationships and the personal and social levels of those relationships (Russell, Peplau et al. 1980; Russell 1982). The literature suggests that one of the most poignant relationships is that between the process of ageing and loneliness. One of the early key studies in this area was Tunstall's (1963) study of the elderly in the UK which showed that approximately 10% of the aged were lonely and 20% were socially isolated. Based on work since then, it is now widely accepted that the prevalence of loneliness is between 3–

25%; it has become a stereotype of later life that there is a network of loneliness, social isolation and neglect (Victor, Bond et al. 2000). This stereotype has been recently challenged by research showing that the elderly report lower levels of distress as a result of their loneliness when compared with other age groups, particularly youths and young adults (Rokach 2000).

A difficulty is that an individual's needs play a major part in determining their perception of the availability of social support or social networks: the reported level of social support becomes therefore, the degree to which a person is satisfied their needs are being met rather than an objective statement of support *per se* (Cobb 1976; Thoits 1982; Rokach 2000). For example, in their study of social networks, Fratiglioni et al assessed the adequacy of support through satisfaction with social contacts rather than contacts *per se* (Fratiglioni, Wang et al. 2000). Others have focussed on the availability of social supports and the individual's tendency to seek social contacts. Barrera's *Inventory of Socially Supportive Behaviours* was based on measuring the support individuals received through their social network; a modified version, the *Arizona Social Support Interview Schedule* was designed to include not only the level of network support, but also the extent to which these satisfied the needs of the respondent (Barrera 1980).

Given this situation, in her review of social support instruments Bowling (Bowling 1991, p121) argued that the relevant dimensions to measure were: (a) connections with others; (b) the number of people within the network and maintaining it; (c) the geographical dispersion of networks; (d) the integration of network members into each others' networks; (e) the composition of the networks; (f) the frequency of contact; and (g) the strength of the relationships. To measure all these dimensions implies that instruments would have a considerable number of items: each of these dimensions ought to be measured separately by several items to ensure reliability. Rokach defined five subscales of loneliness: emotional distress, social inadequacy and alienation, growth and discovery, interpersonal isolation and self-alienation. These were measured by 82 items accounting for 36% of the variance (Rokach 2000). This illustrates the difficulty of measurement. Where the dimensions or subscales of social isolation are inadequately conceptualised and defined, to group them together into summated scales will almost certainly result in instruments with poor psychometric properties. Perhaps this explains Bowling's conclusion, made almost ten years ago but seemingly still applicable, that "There is currently no assessment scale which comprehensively measures the main components of social network and support with acceptable levels of reliability and validity" (Bowling 1991, p122).

For the purpose of the present study, Bowling's first dimension was accepted: namely that social support was primarily concerned with connections with others. Our rationale was that where an individual has no significant connection with others, they will find it difficult to make contact with other people and to get on with them, they will lack intimacy, they may be lonely and feel that (where they do come into contact with others for a health reason) they are a burden to others.

Regarding social isolation as opposed to social support, there is a vast literature: for example, a search of Psychlit (1983–2000) identified 3897 references. However, few of these references were concerned with the correlates of social isolation, and when we crossed these with the search terms "determinants" and "predictors" we identified 49 articles. Review of the abstracts suggested that the correlates of social isolation are: geographic location including living alone or homelessness (Polansky 1985; Mullins, Elston et al. 1996; Gallagher, Andersen et al. 1997), the closeness of personal relationships (Polansky 1985; Maxwell and Coebergh 1986; Dykstra 1990;

Dykstra 1995; Mullins, Elston et al. 1996; Plopa 1996; Gierveld 1998), ethnic status (Polansky 1985; Lewin Epstein 1991; Scheier and Botvin 1996), marital status (Maxwell and Coebergh 1986), health status (Mullins, Elston et al. 1996; Plouffe and Jomphe Hill 1996) and mental health (Cobb 1976; Thoits 1982), employment status (Maxwell and Coebergh 1986), socio-economic resources including income (Polansky 1985; Lewin Epstein 1991; Mullins, Elston et al. 1996; de Jong Gierveld and van Tilburg 1999), age with accompanying communication losses (Retsinas and Garrity 1985; Maxwell and Coebergh 1986), and network characteristics including neighbourhood friendliness and social initiation (Polansky 1985; Cutrona 1986; Straits Troester, Patterson et al. 1994; Gierveld 1998).

1.2 Construction of the friendship scale

None of the instruments from the literature reviewed above, however, seemed appropriate for inclusion in the survey: they were multidimensional, too long, or probed areas which did not seem essential in terms of the Whitehorse Division study. An instrument was needed which:

- Was very short. Respondents were being approached ‘cold’ (without any warning or obvious recruitment phase) and it was thought that the interview needed to be as parsimonious as possible;
- Was as friendly as possible. Respondents would be answering when they could be feeling vulnerable (ie. waiting to see a GP). To meet with this requirement we constructed all items from a positive perspective. They are presented from the point of view of having friends and social support;
- Covered the different domains of isolation. From the literature we defined these as personal intimacy, being lonely, getting on with other people, access to support when needed (i.e. contact with others) and being dependent upon others. In the interests of parsimony, as described above, we constructed just one item for each domain.
- Covered both the intensity and duration of isolation. This was achieved by setting the timeframe within which isolation occurred as the previous four weeks. In addition, all item responses were couched in terms of isolation occurring “not at all” through to “always” within this timeframe.
- Was easily scored for the obvious practical reason of ease of use by the researchers. The scoring system was to be through summation.

One instrument which seemed to provide the appropriate concepts was the Nottingham Health Profile (NHP (Martini and Hunt 1987)): the social isolation scale contained 5 questions which possessed clear and brief item stems (eg. *I'm finding it hard to make contact with people*). The item responses, however, seemed to us to be crude, both in terms of lacking sensitivity (Yes/No) and in terms of the duration of the condition (since the items are in present tense, the responses refer to ‘now’, as in the instruction in the NHP that these questions probed have in their daily life”). In light of the literature, we wanted a measure covering the duration of the isolation. Where social isolation is immediate and temporary due to current circumstances, there may be no implication beyond the present. For the purposes of identifying social isolation as a planning or service use issue, it is important to capture chronic social isolation. Our

assumption here was that ‘immediate’ social isolation evaluation would not necessarily be a true indicator of longer-term social isolation.

Following several discussions and examination of the NHP items, the five items in the *Friendship Scale* (FS) were constructed. The changes we made to the NHP item stems were to alter the tense into past tense (eg the item quoted above was changed to read *I found it easy to make contact with people*) and to set the timeframe to be *During the past four weeks*¹. In order to increase the sensitivity of the item responses we developed 5-point Guttman-type responses probing the amount of time the respondent was evaluating (*Almost always, Most of the time, About half the time, Occasionally, Not at all*). In order to ensure friendliness, we decided that all items would share a common item response format and that we would call the instrument the ‘Friendship Scale’ (FS) rather than include any reference to social isolation. To reduce the possibility of response bias, we reversed two of the item stems (Q2 & Q5).

1.3 Scoring the friendship scale

Prior to scoring, the responses to Q2 and Q5 were reversed to make them consistent with the other items.

Simple summation of item responses provided for a raw range of 5-25, where the higher the score the greater the extent of social isolation. To assist with the ease of understanding scores, a value of ‘5’ was subtracted from each scale score, giving a final range of 0–20.

Regarding the interpretation of scores, an obtained value of ‘0’ implies that social support was always available during the previous four weeks, and a score of ‘20’ indicates that social support was never available during the previous four weeks. Thus the higher the score the greater the sense of social isolation. A person with a score of ‘20’ would be someone who in the previous four weeks did not get on with other people, who felt lonely almost always, who had nobody to share feelings with, who found it very difficult to make contact with others and who felt they were a burden to others. We suspect this condition is very rare.

Due to the very tight deadlines for scale construction and commencement of the survey, we were unable to pre-test the FS. This report describes the psychometric properties of the FS. A copy of the FS can be found in Appendix 1.

2 Psychometric properties of the friendship scale

2.1 Item and scale examination

Table 1 describes the data distributions of each of the five items in the FS. As was expected very high proportions of respondents indicated that they had social support. If ‘1’ is accepted as a measure of social support or friendship:

- 50% of respondents indicated they ‘almost always’ found it easy to get on with other people;

¹ A longer timeframe was rejected on the grounds that social isolation may not be a static condition, but may be influenced by health, social and environmental changes. The limitations of memory could also provide a source of bias where long timeframes are involved.

- 48% reported they did not feel lonely at all;
- 46% reported they almost always had someone to share their feelings with;
- 42% implied it was easy to make contact with people almost always; and
- 63% claimed they were not a burden to other people.

The data distributions shown in Table 1 suggest that the normal tests for item sensitivity do not apply to these items; the skewed distributions ensuring the use of means and standard deviations would provide spurious estimates.²

Table 1 Item data distribution

	<i>Item response (a)</i>					<i>Total</i>	<i>Missing</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>		
Easy to get on with others	315 (50% (b))	267 (42%)	35 (6%)	13 (2%)	6 (1%)	636	49
Felt lonely (c)	302 (48%)	252 (40%)	37 (6%)	32 (5%)	7 (1%)	630	55
Can share feelings	294 (46%)	189 (30%)	48 (8%)	87 (14%)	18 (3%)	636	49
Can make contact with others	265 (42%)	262 (41%)	57 (9%)	39 (6%)	10 (2%)	633	52
Felt a burden to others (c)	398 (63%)	186 (29%)	21 (3%)	17 (3%)	11 (2%)	633	52

Notes: a = 1 = Almost always

2 = Most of the time

3 = About half the time

4 = Occasionally

5 = Not at all

b = Percentages may not add up to 100% due to rounding up.

c = Items 2 & 5 reversed.

Turning to item correlations, given the pattern of responses shown in Table 1 it was expected that there would be high correlations between the items. As shown in Table 2, this was not the case; the correlations were between 0.22–0.51; indicating moderate agreement.

² The problem is almost certainly caused by the population of respondents. Normally, instrument construction procedures seek to draw the construction sample from a heterogenous population on the basis that the full range of conditions will be represented. We have no evidence that the full range of social isolation was represented in our construction sample.

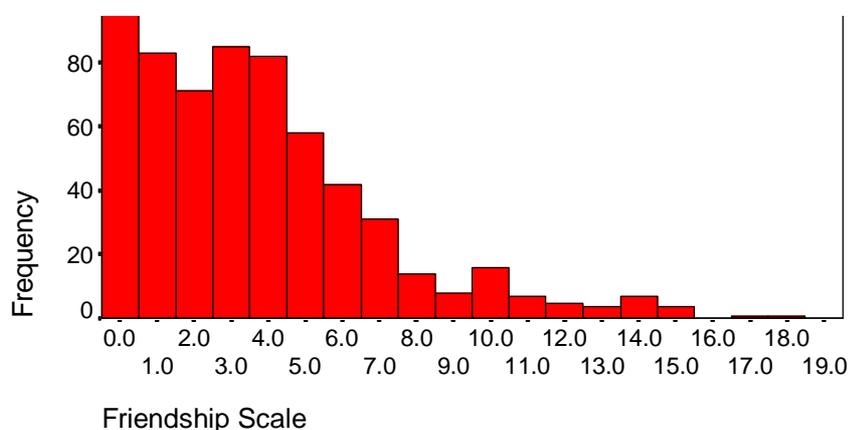
Table 2 Correlations between items

		<i>Items</i>			
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
<i>Items</i>	<i>2</i>	0.29			
	<i>3</i>	0.27	0.43		
	<i>4</i>	0.51	0.48	0.44	
	<i>5</i>	0.27	0.43	0.22	0.38

Notes: Spearman correlations, all correlations < 0.01

Examination of the FS revealed, consistent with the item distributions, a very skewed data distribution. As shown in Figure 1, 17% of respondents obtained the lowest scores ('0'), 13% obtained a score of '1', 11% '2', 14% '3' and 13% '4'. These scores suggest that 68% of respondents obtained scores within the lowest 20% of the scale range. By way of comparison, there were only 2 respondents obtaining scores in the top 20% of the scale range (ie. scores in the range 15–18).

Figure 1 Friendship scale distribution of scores



2.2 The internal structure of the friendship scale

The internal structure of the FS was examined using factor and reliability analyses.

Principal components analysis was used to identify the internal structure of the FS. As shown in Table 3, all five items loaded on a single factor, ranging from 0.83 (Item 4) to 0.61 (Item 3). This finding suggested the five items formed a unidimensional scale. The proportion of explained variance, however, was poor at 53%.³

The two pivotal items (Items 4 and 2) suggest that the meaning of the scale (ie. what it is measuring) is in relation to the ease of contact with people (Item 4) and the degree of loneliness (Item 2). Together we have interpreted these to represent social isolation.

The internal consistency of the scale was acceptable at Cronbach $\alpha = 0.76$.

Table 3 The internal structure of the friendship scale

	<i>Principal component analysis</i>			<i>Cronbach α</i>
	<i>Item loading</i>	<i>Eigenvalue</i>	<i>% variance explained</i>	
1	0.70			
2	0.80			
3	0.61			
4	0.83			
5	0.63	2.67	53%	0.76

2.3 Validation of the friendship scale

To investigate the validity of the FS, it was hypothesised that scores would systematically vary by the predictors outlined in the literature reviewed above. The variables available in the survey database for concurrent validation using this test fell into two groups: (a) those describing the study population and (b) those reporting the health status of the study population.

The variables available under (a) were: living status (defined by marital status), age, ethnic status (defined by birthplace and English proficiency), employment status, and socio-economic resources (measured by income, social security/pension receipt).

³ It is widely accepted that the proportion of explained variance should be in the vicinity of 75% for scale items to satisfactorily explain a latent concept. Generally the advice is that sufficient factors (and therefore items) should be retained to achieve this. For discussions of the role of factor analysis in instrument construction, Pedhazur & Schmelkin or Streiner & Norman offer good introductions (Pedhazur and Schmelkin 1991; Streiner and Norman 1995).

Under (b) the variables available were: general health status (defined as the frequency of GP visits, having a significant illness and the general health question from the SF-36), and physical and mental health (the SF-36 physical and mental health summary scales⁴).

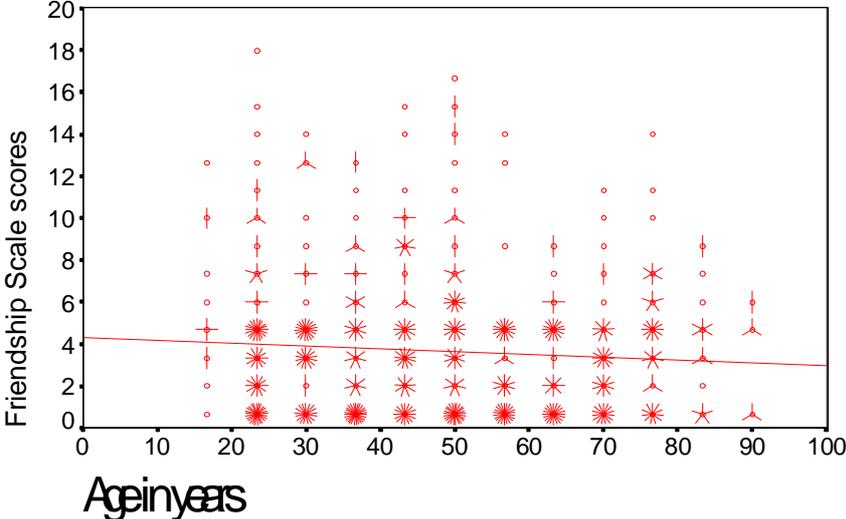
The results of our analyses are presented in Tables 4 & 5 and in Figures 2, 3 & 4.

Figure 2 shows the relationship between age and the FS. As shown, there was a significant association (Pearson's $r = -0.08$, $p = 0.05^*$), although the correlation was minimal. Table 4 shows the relationship between the other putative predictors and the FS. As shown in the table the FS varied on all these predictors as would be expected from the literature.

- Those who were single, divorced/separated or widowed reported significantly increased levels of isolation when compared with those who were married.
- There was no significant difference by country of birth. The coding of the countries here was determined by the necessity of grouping countries into categories sufficiently large for meaningful analysis due to the very small number of respondents from many countries. Although not statistically meaningful, the following gives some idea of the variation in FS scores by different countries of birth (not Australia): for the 5 cases born in the Middle East/North Africa the median FS was 7.5; for the 8 cases born in North America it was 3.0; for the 9 cases from Central/South American it was 4.0; and for the 10 cases from Africa it was 3.0. There was 1 case from Vietnam with a score of 12.0, and the 5 cases from Malaysia obtained a median score of 4.5.
- Those who reported that they spoke English 'not well' obtained significantly higher FS scores when compared with those reporting they spoke English "Well" or "Very well".
- Those who were unemployed reported the highest level of social isolation, followed by those who were students or retired/on sickness benefits when compared with those who were working or were homemakers. The differences were statistically significant.
- FS scores also significantly varied by income. Those with lower household incomes obtained FS scores indicating greater levels of social isolation when compared with those with higher household incomes.
- Those in receipt of a pension or social security benefit also obtained significantly higher scores indicating greater social isolation when compared with those not receiving such benefits.

⁴ Within the SF-36 there are two questions which probe participation in social/family relationships (questions 6 & 10), there are also eight scales (physical role, physical function, bodily pain, vitality, general health, social role, role emotion and mental health) as well as the two summary scales (physical and mental health summaries). Rather than examine the FS against several different indicators, the physical and mental health summary scales were used since the other SF-36 questions are all subsumed within these scales.

Figure 2 Age and friendship scale scores



Correlation: $r = -0.08$, $p = 0.05$

Table 4 Friendship scale scores by selected demographic indicators

		<i>Friendship Scale</i>		<i>Statistics (a)</i>
		<i>Median</i>	<i>IQR(b)</i>	
Gender	Male	3.0	3.5	$\chi^2 = 3.19, p = 0.07, NS$
	Female	3.0	4.0	
Marital status	Married/Partnered	2.0	3.0	$\chi^2 = 63.38, p < 0.01^*$
	Single	4.0	4.0	
	Divorced/Separated	4.0	5.0	
	Widowed	5.0	3.0	
Birthplace	Australia	3.0	4.0	$\chi^2 = 6.00, p = 0.11, NS$
	Europe	3.0	4.0	
	Asia	2.0	3.0	
	Other	4.5	7.0	
English proficiency	Good	3.0	4.0	$\chi^2 = 7.22, p = 0.03^*$
	Well	4.0	4.0	
	Not well	7.0	8.3	
Employment status	Working (F/T, P/T)	3.0	4.0	$\chi^2 = 21.15, p < 0.01^*$
	Unemployed	5.0	8.0	
	Homemaker	3.0	4.0	
	Student	4.0	4.5	
	Retired/Sickness benefit	4.0	4.0	
Income	<= \$14999	4.0	5.0	$\chi^2 = 15.90, p < 0.01^*$
	\$15000 – \$29999	3.0	5.0	
	\$30000 – \$59999	3.0	4.0	
	\$60000 +	3.0	3.0	
Social security	Yes, pension received	4.0	4.0	$\chi^2 = 17.39, p < 0.01^*$
	No, pension not received	3.0	4.0	

Notes: a = Kruskal-Wallis 1-Way Anova
b = Interquartile range

Turning to the health status correlates of social isolation, the data are presented in Table 5 and Figures 3 & 4. Table 5 shows:

- There was a monotonic relationship between the frequency with which cases visited their GPs and their FS scores. Those visiting weekly or more obtained scores indicating the greatest levels of social isolation, whilst those visiting 6-monthly or less exhibited the lowest levels of isolation.
- FS scores also significantly varied by whether a case reported they had a significant illness or not. Those with significant illnesses reported higher FS scores indicating greater social isolation.
- Self-reported general health status was monotonically related to FS scores. Those reporting they were in 'excellent' health reported the lowest level of social isolation, whereas those reporting their health was 'poor' obtained FS scores indicating that they were the most socially isolated.
- There was a strong negative correlation between obtained mental health scores from the SF-36 with FS scores, as shown in Figure 3 (Pearson $r = -0.64$, $p < 0.01^*$).
- There was a weak negative correlation between obtained physical health scores from the SF-36 with FS scores, as shown in Figure 4 (Pearson $r = -0.12$, $p < 0.01^*$).

Figure 3 **Mental health and friendship scale scores**

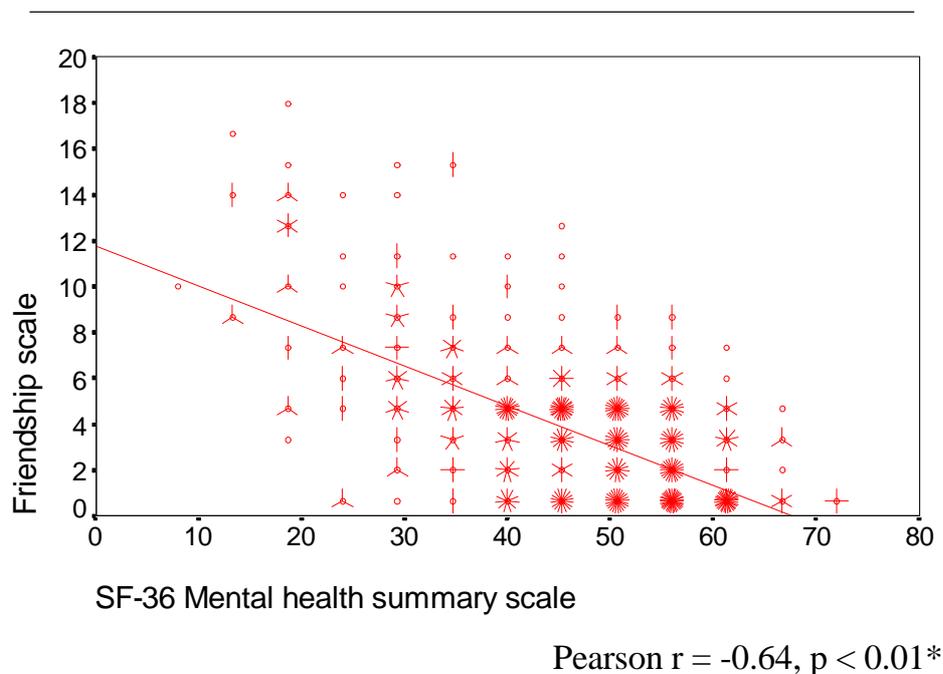
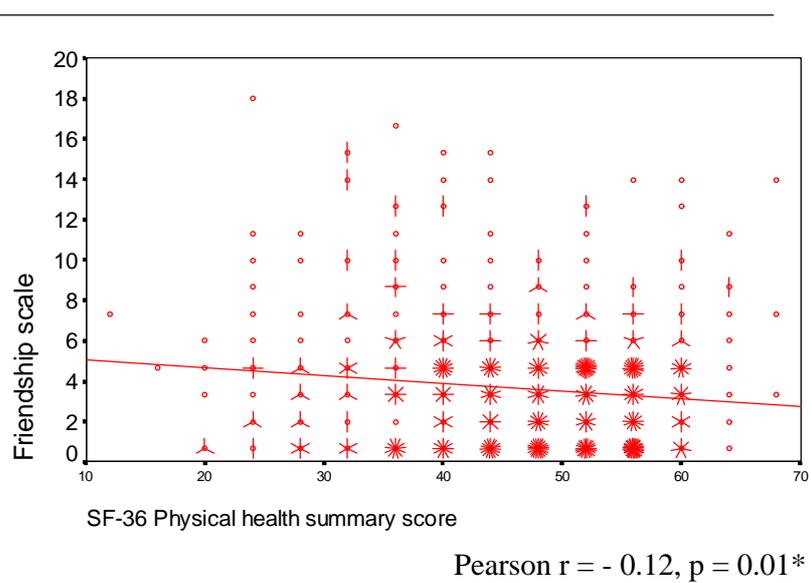


Table 5 Friendship scale scores by selected health status indicators

		<i>Friendship Scale</i>		<i>Statistics (a)</i>
		<i>Median</i>	<i>IQR(b)</i>	
GPs visits	Once a week	5.5	8.3	$\chi^2 = 24.35, p < 0.01^*$
	Fortnightly	5.0	7.0	
	Monthly	4.0	4.0	
	Every six months	3.0	4.0	
	Yearly/Less often	3.0	3.0	
Significant illness	No	3.0	4.0	$\chi^2 = 15.22, p < 0.01^*$
	Yes	4.0	4.0	
General health status (c)	Excellent	1.0	3.0	$\chi^2 = 69.55, p < 0.01^*$
	Very Good	3.0	3.0	
	Good	3.0	4.5	
	Fair	4.0	4.5	
	Poor	8.0	5.0	

Notes: a = Kruskal-Wallis 1-Way Anova
 b = Interquartile range
 c = General health status question from the SF-36

Figure 4 Physical health and friendship scale scores



3 Discussion

Validation is an ongoing process (Anastasi 1986), but instruments can be accepted as being 'valid' where a nomological net of evidence can be assembled suggesting that the instrument measures what it is supposed to measure (Cronbach and Meehl 1955). Generally, three kinds of validity evidence are accepted as conferring validity:

- Content validity refers to the extent to which an instrument measures the universe it is supposed to be covering. Content validity can be demonstrated where the manifest responses to the instrument items may be considered to be a representative sample of all possible responses to items covering the universe of interest (Lennon 1965).
- Construct validity is where obtained scores vary in accordance with our expectations of the underlying universe being measured. This is usually assessed by observing whether scores systematically vary in accordance with cases who have the property in greater or lesser amount (Anastasi 1976).
- Criterion validity relates to the relationship between scale scores and either other independent measures (criteria) or other specific measures (predictors). This is usually assessed through correlating the relationship between the criterion/predictors and the instrument of interest.

Regarding content validity, the FS was developed from a literature review of social isolation and loneliness. This review suggested that the areas comprising this universe were the absence of relationships, living alone, social integration and networks, and the intimacy and durability of these networks. The literature also suggested that self-assessment of these constructs is mediated by a person's needs. We interpreted this literature as comprising a single dimension primarily concerned with connectedness with others, expressed in terms of: (a) social isolation as having no significant connection with others; (b) finding it difficult to make contact with others or to get on well with them; (c) lacking intimacy, (d) feeling lonely and (e) being a burden to others. Each of these was measured with a single item; the five items were shown by exploratory factor analysis to form a single unidimensional scale. The ordinary correlations between the items — almost certainly caused by the diversity of item content — accounts for the low proportion of variance explained by the principal component factor analysis: if different social supports are being tapped into (i.e. a person has one or two supports but not others), then there is no reason the proportion of explained variance will be high.

An issue relevant to the construct validity of the FS is the distribution of scores. As shown in Figure 1 these were substantially skewed, with 80% of cases falling within the first quartile of the possible range (ie. scoring 0–5), 18% falling within the second quartile (6–10), 4% in the third quartile (11–15), and just 2 cases in the fourth quartile (16–20). There are two ways of interpreting this finding: one that the measure is insensitive and suffers a ceiling effect, the other is that this distribution should be expected (most people are not socially isolated).

The data presented in Tables 4 & 5 and in Figures 3 & 4 would not support the argument of insensitivity. Whether there is a ceiling effect, however, is open to discussion. If people genuinely have good social relationships and networks, then the skewed distribution may not be a ceiling effect at all but an accurate reflection of the underlying situation. At the moment, we have no evidence that this is not the case.⁵

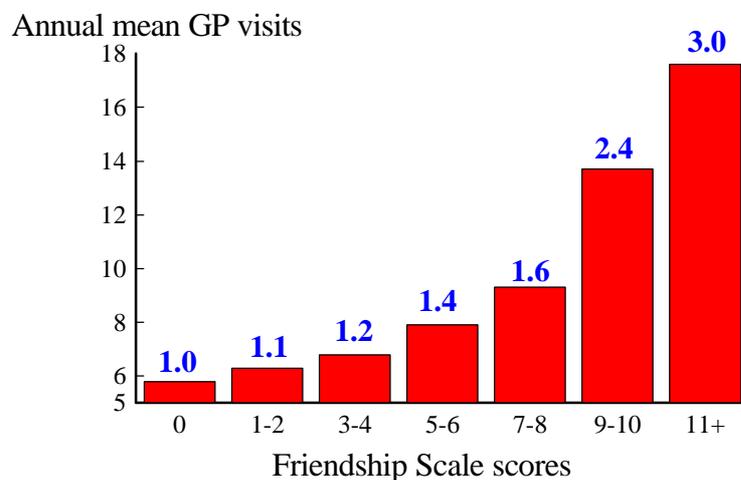
We assessed construct validity through examining the FS scores by the known demographic correlates of social isolation, namely marital status, birthplace, English proficiency, employment status, income and being in receipt of a social security benefit. Although comparison with these variables does not confer construct validity in a strict sense, it is implied where FS scores varied as expected. As shown in Table 4, the scores did systematically vary. An unexpected finding was in relation to birthplace, where those of Asian origin reported the lowest level of social isolation (or highest level of connectiveness, depending upon which way the FS is interpreted). What was also interesting about the country of origin findings was the high level of social isolation reported by those from countries with small representations in the sample, as discussed in the text. It is possible this was due to the loss of social networks, whereas there is a sizable Asian community in parts of the Whitehorse Division. The same phenomena was also observed in regard to English proficiency; this is almost certainly a surrogate measure for other social factors causing the isolation. In our dataset, of the five cases reporting they spoke English “not well”, one was from Italy, two from Croatia/Yugoslavia, one from Hong Kong and one from Vietnam.

Finally, regarding criterion validity. No established isolation scale was employed in the study for reasons of parsimony. Therefore FS scores were assessed against other measures (predictors of the trait of interest) which may reflect social isolation scores: the frequency of GP visits, having a self-reported significant illness, the general health question from the SF-36 and the SF-36 physical and mental health summary scales. As shown in Table 5 and Figures 3 & 4 the relationships for the number of GP visits, illness, general health, mental health and physical health were as expected (although with the SF-36 physical health summary scale the relationship was much weaker than expected). When we examined the relationship between reporting a significant illness and reporting general health status, the scores were consistent with each other; those who reported a significant illness were more likely to report a poorer health status ($\chi^2 = 138.07$, $p < 0.01$). The findings would suggest that those with poorer health were those who were the most socially isolated. In addition, when broken down by FS scores there was a monotonic relationship with predicted mean calculated number of GP visits per year⁶, as shown in Figure 5. These data, showing that the socially isolated (FS score: 11+) have three times the number of GP visits when compared with those who are fully socially connected (FS score: 0), are entirely consistent with Ellaway *et al*'s report that the socially isolated have almost twice as many consultations with their GP as those who are not socially isolated (Ellaway, Wood et al. 1999, p365).

⁵ It would be unlikely that people, in general, in the Whitehorse Division of General Practice in Melbourne are socially isolated. This is an middle/outer suburban area in Greater Melbourne where the socio-economic indicators for participants are above the Australian average based on the Socio-Economic Indicators for Australia (mean for respondents in the study = 1078, compared with the Australian mean of 1000).

⁶ The predicted number of GP visits per year was calculated from the frequency of GP visits given by respondents. Where a respondent indicated he/she visited weekly, the assigned value was 52, for fortnightly it was 26 etc.

Figure 5 Predicted GP visits by FS score



Notes:

Statistics: ANOVA, $F=6.54$, $p<0.01^*$

Values on columns are relative number of predicted GP visits where FS=0 is set at 1.00

In summary, the available validity evidence would suggest that the FS is a valid, reliable and sensitive instrument. Although this is a tentative conclusion — due to the limitations of the population (we have no knowledge if those attending the GP clinics represent the full range of socially isolated cases), the sampling method (convenience in that our interviewers approached those who were available), the actual sample (we have no method of knowing whether those who chose to participate were a biased sample), and the lack of appropriate criterion instruments — the available evidence would suggest that the Friendship Scale is sufficiently robust to be used with confidence. Further research, however, is needed to verify the findings of this validation study.

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Appendix 1: The Friendship Scale⁷

During the past four weeks:

- | | | | |
|----|--|----|---|
| 1. | I found it easy to get on with other people: | 2. | I felt lonely: |
| | ○ Almost always | | Almost always |
| | ○ Most of the time | | Most of the time |
| | ○ About half the time | | About half the time |
| | ○ Occasionally | | Occasionally |
| | ○ Not at all | | Not at all |
| 3. | I had someone to share my feelings with: | 4. | I found it easy to make contact with people |
| | ○ Almost always | | Almost always |
| | ○ Most of the time | | Most of the time |
| | ○ About half the time | | About half the time |
| | ○ Occasionally | | Occasionally |
| | ○ Not at all | | Not at all |
| 5. | I felt I was a burden to people: | | |
| | ○ Almost always | | |
| | ○ Most of the time | | |
| | ○ About half the time | | |
| | ○ Occasionally | | |
| | ○ Not at all | | |

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