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Title: RECOGNISING SOCIAL NETWORKING ACTIVITIES AS THE MEANS BY WHICH OLDER PEOPLE CAN AGE HEALTHILY AT HOME: A DISCURSIVE EXPLORATION

Article Category: Research Article

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Abstract: We are living in a widely connected society in which two people can exchange information via mobile, landline, email or internet no matter how far apart they live. Ageing in such an extensively connected society is a research topic of increased relevance if older people are to perceive themselves, and be seen by family, friends and society to be ageing healthily at home, in the widest senses of this term. Hypothetically speaking, the person on one side of the exchange can be a family member, friend, acquaintance or a provider of public and private services, who knows where to buy and how to install a handrail in the bathroom. The person, who is calling or sending the message, can be an older person in need of help with installing such a handrail, because he or she tripped this morning and decided that it is about time to reduce their accident risk.

How can older people, who are willing to, activate geographically close or distant members in their social network to access help with basic home improvements? The aim of this article is to explore recent research that, from our point of view, has potential to addresses this question scientifically. The first part defines a person’s social environment and introduces an approach to describe and analyse social networks. The second part, looks at studies describing obstacles older people experience when trying to engage with others in their network, such as face-to-face, telephone, email contact or internet chats. The final part introduces recent research that integrates various theoretical and empirical insights into a person’s social context and his or her diverse networking activities. From this we draw recommendations for future research.

Keywords: Gerontology, Transport Planning, Social Networks, Internet Usage
Introduction

The United Nations recognize that older people have the right to independence and participation in all aspects of life at present and as they grow older (UN, 2011a). The report on the second UN World Assembly on Ageing states that elderly people all around the world are not only facing discrimination on the basis of age, but are affected by forms of discrimination, poverty and violence as well as a lack of specific services and resources. The unfolding economic crisis is bound to make matters worst (UN, 2011b). Most OECD countries are now under extreme pressure to deliver austerity measures to bring budget deficits under control. Increased unemployment and poverty rates squeeze the resources available for social services provision.

In the UK, the current Coalition Government vowed to protect the rights of their senior citizens in general, but particularly focuses on an elderly person’s right to age healthily at home where they can continue to be connected to family and friends and be able to access local care or support of their choice. The Coalition agreement specifically states: “We will help elderly people to live at home for longer through solutions such as home adaptations and community support programmes.” (HM Government, 2010: 25). Indeed, there are strong fiscal, social and psychological arguments for older people to remain within their familiar environments. A recent report of the All Party Parliamentary Group on Housing and Care for Older People (APPG, 2011) states that the number of people aged over 65 is projected to rise from 10.1 million to 16.7 million over the next 25 years and they expect a rise in the number of people aged 85 and over to 3.3 million by 2033. Already over half of the National Health Service (NHS) spending is on people over 65. The report also includes estimates that public spending on social care will need to triple over the next 20 years to keep pace with the ageing population. It concludes that modest investments in safer and more accessible homes, such as basic home improvements (e.g. installing a handrail) or help with housekeeping, can prevent accidents and thereby reduce the number of hospital submissions and save the costs and traumas of moving into residential care (APPG, 2011: 3).
Theories of “environmental press” have, of course, long recognized that the physical environment can create barriers for older people. Scholars have tended to focus on the fit or balance that an older person can achieve between the physical environment, notably the built and material worlds they inhabit, and their physical and cognitive abilities, preferences and capacities – e.g. biological health, motor behavior, sensation (Lawton & Nahemow, 1973; Lawton, 1980; Peace et al., 2003).

Social network studies, in contrast, primarily acknowledge the link between an older person and his or her social network. Network scholars have tended to focus on the impact that mutually supportive relations can have upon the older generation’s well-being (Adams & Blieszner, 1998; Kunitz, 2004: 71). More recent research has started to acknowledge that, in theory, each person also manages his or her own network (Cornwell, 2009, Cornwell & Waite, 2009).

We argue that a more progressive and positive approach to ageing could recognize the impact an older person’s cognitive and physical abilities as well as his or her social and physical environments can have on his or her ability to request the support needed to remain active at home and in their community. This article will, therefore, glance beyond the actual provision of or demand for support and onto the obstacles adults aged 65 over face when trying to activate their social network to arrange help.

At the heart of this discussion is the question of how older people, who are willing to, can activate geographically close or distant members in their social network to access help with basic home improvements? The first part describes a person’s social environment from a formal network perspective, using a hypothetical example. The second part, looks at studies that investigate obstacles older people experience when trying to engage in social networking activities, such as face-to-face, telephone, email contact or internet chats. The final part introduces recent research that integrates various theoretical and empirical insights into a person’s social context and his or her diverse networking activities. From this we draw recommendations for future research.
A nuclear family & housekeeping

Figure 1 represents a hypothetical example of a relatively common nuclear family structure and their domestic help. Sarah (58 years) lives 200 miles away from her aging parents (86 year old Mum, 91 year old Dad), whereas Steve (61 years), her brother who lives in the immediate neighborhood, visits them twice a week. In order to support her brother, Sarah pays Pam (45 year old) to clean their parents’ house twice a week. Sarah’s Mum likes Pam very much, because she always has time for a cup of tea. Steve’s Dad, in contrast, constantly complains to Steve about Pam. Steve, who is worried that his Mum might risk a serious fall by trying to carry out Pam’s work, believes that they would be better off with a more efficient domestic help. He eventually emails Sarah regarding this matter. Sarah, who calls her Mum twice a day, has thought up to this point that everybody profits from Pam’s company. It is only after Sarah received Steve’s email that she fully understood the situation.

Wasserman and Faust (1994) define collectives, such as this group, as a set of actors (nodes) and the relationships connecting these networks (ties). Actors can be people, organisations or groups. The graph in Figure 1 represents this network. It includes five nodes and eight ties.

<INSERT FIGURE 1 ABOUT HERE>
Social Networks

Scholars who adapt a formal network perspective would probably consider the role of each connection between the people in this hypothetical network of five, rather than simply acknowledging the inter-connectedness of the situation. In contrast to the later, the former approach is grounded in graph theory and employs various mathematical measures to formally describe patterns of relationships, such as the density of networks\(^1\) or the structural position of particular nodes\(^2\).

Network scholars recognize that each pair of nodes in this example are linked to each other in several different ways, and that these ties differ in terms of frequency and mode of contact as well as content: for example, what kind of information or goods are being exchanged, frequency and communication mode (Wasserman & Faust, 1994).

<INSERT FIGURE 2 ABOUT HERE>

Take for example the relationship between the siblings (Sarah & Steve) and their parents. Whereas the mutual support connection between Sarah and her Mum, Sarah and her brother and Steve and his Dad is immanent, the link between Sarah and her Dad is less tangible (compare Figure 2a and 2b). Both hardly ever communicate with each other directly, although they are directly connected through affection. Her Mum usually keeps Sarah informed about his every step and visa versa when they talk on the phone. Her brother emails Sarah once in a while with news about their parents, knowing that both women talk frequently. Given the situation, Sarah’s knowledge about her Dad heavily depends on what her Mum and brother chose to tell her. Hence, it needed the email from Steve for Sarah to realise that she needs to investigate the

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1 Network density is described as the ratio between all ties present in a graph and the theoretically possible number of ties that would be present if the graph was fully connected. A low density suggests that the nodes or groups of nodes, in the graph are poorly connected – implying the existence of nodes that are not directly connected to each other.

2 The structural position of nodes can be calculated in terms of the number of incoming and/or outgoing connections, the number of steps it would take to contact other nodes and the number of unconnected nodes that it links to each other.
domestic help situation in more detail.

Burt’s (2003) work on structural holes and brokerage is commonly used to theoretically describe structural patterns like these. The work of Adams and Blieszner (1995), in contrast, could be usefully applied to describe the role of the social relationships that Sarah’s Mum maintains with Sarah and Pam. For example, these ties could be sources of pleasure and companionship, which help Sarah’s Mum to alleviate stress when dealing with her immediate physical and social environments that provided the context of her daily living. The link between health and social environment is not necessarily positive.

Let us assume that Sarah’s Mum is showing signs of depression. Kunitz (2004) suggests that a heightened sense of mortality and a reduced sense of purpose, tied in with feeling out of place, might also be related to the number of people in the immediate environment, who embrace or reject one’s views of society and the world. From this we can assume that the wellbeing of Sarah’s Mum may be caused by her every day social environment. A researcher who wished to address this phenomenon would map her personal network, which is also known as an egocentric network featuring Sarah’s Mum as the “ego”. Figure 3 represents three different ways to look at her personal support network. The underlying assumption is that the analysis of the Mum’s personal network only includes direct conversations in an average week.

<INSERT FIGURE 3 ABOUT HERE>

The graph (a) includes the whole network topology with the “ego”, Sarah’s Mum, in the centre. The network also includes four ‘alters’, which are “ego’s” contacts. Naturally, egos are always the most central actors in their networks. Thus, personal networks including “egos” and their relations are biased in their direction (Wasserman and Faust, 2007; Scott, 2007). The second sub-graph (b) excludes the “ego” and all her relations for this reason. Finally, sup-graph (c) does
not include, “isolates”, those contacts in her network who are exclusively connected to “ego” and not to the “alters”.

Figure 2a suggests that Sarah’s Mum, with four ties, is the most central player in this network of five – meaning that she has the highest degree centrality. She inhabits also a central brokerage position that connects Sarah and Pam to Steve and his Dad, as becomes clear in Figure 2b. Figure 2c highlights that the only people in her personal network that, independently of her, share a direct connection are Steve and his Dad.

The graph suggests that Sarah’s Mum is embedded in a male dominated triangle, which may negatively impact upon her wellbeing. However, given her willingness to call her daughter twice a day and strike up a conversation with Pam twice a week, one cannot help but wonder why she is not trying to establish new connections. Maybe she does. Maybe, the problem lies with the research that only focuses on this small static network, not inquiring about past or future ties.

Cornwell (2009), recently, introduced the notion that older people can in fact effectively manage their network of social relations to get actively involved in community events, maintain influence and power, and support each other when needed (Cornewell, 2009; Cornwell & Waite, 2009). For example, Sarah’s Mum might use her connection to Pam to (re)establish connections to people both of them know.

A number of other studies have since recognized the value of better understanding of the rationales for an older person’s conscious decisions to engage with others or respond to the loss of a social connection (c.f. Luong et al, 2011; Stevens & Van Tilburg, 2011). A more progressive and positive view of ageing could, therefore, not only describe an older person’s social network and his or her role within it over time, but also be able to explain how they maintain existing or accumulate new social connections.
Leisure Networks

Recent studies that focus on people’s leisure behavior acknowledge that the structure of social networks impacts upon a person’s desire to travel and/or use alternative modes of communication (Schlich et al., 2004, Carrasco et al., 2006, Moore, 2010). To better understand this link between a person’s social connections and his or her demand for face-to-face contact or other forms of social contact, we need to understand their social networks. So far, only few studies have used the methods of formal social network analysis to gain initial empirical insights into the link between the connections a person maintains and his or her leisure behaviour, such as the frequency of journeys or calls, and the geographic distance (see Larsen et al., 2006; Carrasco, 2006; Frei & Axhausen, 2007). This body of work exclusively focuses on a person’s social network and derives from the data conclusions about his or her travel and communication patterns. However this work does not give much consideration to a person’s attributes, such as age or possible mobility or communication barriers.

Inclusion Debate

The more traditional body of research on older people’s leisure behavior has, in contrast, tended to focus on the complex interdependencies between an older person’s desire to socialise with others, his or her cognitive and physical abilities and his or her physical environment (e.g. Lawton & Nahemow, 1973; see also Lawton, 1980; Peace et al., 2003). This research stream has so far not integrated insights from formal network studies, and only generally recognizes the role of a person’s social connections. Let us return to our hypothetical example. Traditionally researchers would inquire about physical obstacles that have the potential to stop a person like Sarah’s Mum from meeting her friend Pam in church, such as the distance between her home and church as well as the accessibility of the street level and urban design.
Solomon and Titheridge (2007), for example, studied the connection between mobility and older people’s social and leisure activities. The researchers employed a mixed-method approach involving the statistical analysis of the National Travel Survey for Great Britain for the years 1998 to 2001 and several focus group meetings with older residents in urban and sub-urban contexts. The study found that, firstly, people aged 65 and over are more likely to report difficulties travelling on foot or on bus or both than other age groups. Secondly, the total number of trips and miles traveled declines with increased difficulty to travel. Finally, adults aged 65 and over generally commute less than other age groups (Solomon, 2006; Titheridge & Solomon, 2007).

Researchers that use Titheridge and Solomon’s work, derive from it assumptions about the number of older people in a given neighborhood put at risk of losing social connections where particular service opportunities are being relocated– i.e. post office (Achuthan & Mackett & Titheridge, 2010). This perspective accepts distance as a factor that impacts negatively on an older person’s ability to maintain social connections. Other studies have focused on the socially inclusive design of journeys that include one or more modes of transport - taking into consideration physical abilities, such as vision, hearing and psychomotor coordination (cf. Marshall, 2010; Mackett & Achuthan & Titheridge, 2010) and perceptual factors, such as fear of crime (Evans. 2009; Shaw, 2009).

None of these studies, however, looked at available means that could substitute mobility (Victoria Transport Policy Institute 2011) or at least complement it (Tilema et al., 2010; Axhausen & Frei, 2007). Axhausen and Frei (2007) and Tilema et al. (2010) have presented empirical data that point to a complementary effect. For example, Tileman et al. (2010) found on the basis of descriptive analyses and with respect to information content and relational distance that synchronous modes/services (face to face and telephone conversations) are used more for urgent matters and that asynchronous modes (in particular email) become more influential as the relational distance increases. For example, the contact is a friend of a friend of a friend.
Only a few studies have looked at both physical and cognitive factors that impact on older people’s willingness and ability to use alternatives means of communication, such as the telephone, computer or the Internet, to communicate with friends, family and service providers. Kahana et al. (2011), for example, have gathered longitudinal survey data on successful ageing of elders in four distinct urban communities. The data confirms that mobile and Internet use is increasingly relied upon by people aged 75 over. Nevertheless, out of 514 study participants (mean age of 77.6 years, SD=8), almost 13 percent use these technologies infrequently. The study identifies factors, such as availability, access and skills, as potential barriers which obstruct people’s use of computers and the Internet (Kahana et al., 2011). This is a well recognized phenomenon. For example, Gatto and Tak (2008) highlight physical and mental limitations, but also perceived threats (e.g. identify theft) as obstacles to using a computer and the Internet more often or for longer periods of time (Gatto & Tak, 2008; see also Peacock & Kunemund, 2007; Czaja, 2006; Sharit, 2008; see Wagner et al., 2010 for contemporary summary).

The research discussed so far established that elderly adults are directly or indirectly connected to others and that these connections aggregating to social networks. Whereas networks are widely recognized as a factor that influences older peoples’ wellbeing, recent accounts recognize them as active players within this space. There has been a new development in the literature, which recognizes that social networks impact upon a person’s travel and communication patterns. From this it could be concluded that an older person can be expected to seek access to a contact within his or her network if he or she needs help at home – given his or her ability to overcome potential cognitive and physical obstacles. There generally is a gap in the literature that correlates the use of available means by which older people seek to maintain social relationships to the content, strength and frequency of these connections.
Social networks and social networking activities

Researchers have only just started to generate empirical evidence that can contribute to the development of theoretical statements about the causal connections between social networks, the built environment and a person’s leisure behaviour. (cf. van den Berg et al., 2008, Kowald et al., 2009) The Institute for Transport Planning and Systems at ETH Zurich is currently undertaking the first attempt to generate data on participants’ personal networks and leisure behaviour, as well as capture the links between those networks. This Swiss based study employs a nation-wide series of paper-based surveys.

To ensure that the survey captures information on connected personal networks and, thus, allow analysis of the ‘global’ network within the given population, the team is employing an ascending sampling strategy called snowball sampling\(^3\). As of July 2011, the team surveyed 789 personal networks, including a total of around 15,500 contacts.\(^4\)

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\(^3\) The strength of snowball sampling in collecting survey information on connected personal networks (Frank, 1979; Scott, 2007) is countered by network properties resulting in bias. Basically there are three bias sources (for more details see Erickson, 1979; Kowald and Axhausen, forthcoming). First, respondents selectively mention their social contacts for which snowball samples do not fit the criterion of randomness. To balance this bias the survey employed several measures to establish trust between respondents and the research team. This aimed to increase the level of trustworthiness and ensure the confidentiality of the data treatment. Second, snowball sampling results in larger network structures than average. The more alters a person has the more communication channels are available for the snowball chain to reach this person. In other words, people with large network structures have a higher chance of being asked to participate. To correct the overrepresentation of large network structures, a team at TU Berlin has developed an estimator for weighting network sizes on the basis of frequency of their occurrences in each snowball iteration level (for details see Illenberger and Flötteröd, 2011). Finally, there is the risk of being captured in homogeneous clusters in terms of characteristical and behavioural similarities between egos and their alters. These similarities, also called homophily, are a well described personal network pattern (McPherson et al., 2001). To counterbalance homogeneous tendencies in the sample’s socio-demographics, snowball chains were started in two sub-samples successively. Each sub-sample used 20 seeds, the initial respondents, recruited from a stratified random sample. The method succeeded in alleviating an age bias included in sub-sample one (for detailed information see Kowald and Axhausen, forthcoming). Given a network size of 20 alters it took at least two hours to fill out the questionnaire. In addition, the data set only includes low levels of item non-response, in terms of egos characteristics mostly between one and five percent, in terms of alters’ characteristics around 15 percent. Given a network size of 20 alters it took at least two hours to fill out the questionnaire. In addition, the data set only includes low levels of item non-response, in terms of egos characteristics mostly between one and five percent, in terms of alters’ characteristics around 15 percent. On bias: Males as well as single households are underrepresented by nearly seven respectively eight percent. A large overrepresentation (nearly ten percent) can be found for married persons. In all other socio-demographic attributes the fit is good, with minor deviations of around one percent including respondents’ and their alters’ age

\(^4\) The survey reached a response rate around 27 percent, which is considered satisfactory given the level of confidentiality implied in the questions (e.g. names and postal addresses of friends and family members) and the amount of response burden (given a network size of 20 alters it took at least two hours to fill out the questionnaire). In addition, the data set only includes low levels of item non-response, in terms of egos characteristics mostly between one and five percent, in terms of alters’ characteristics around 15 percent. On bias: Males as well as single households are underrepresented by nearly seven respectively eight percent. A large overrepresentation (nearly ten percent) can be found for married persons. In all other socio-demographic attributes the fit is good, with minor deviations of around one percent including respondents’ and their alters’ age
The survey itself covers four fields of interests: Firstly, participants are being asked to report on their own socio-demographic and their mobility biography. Secondly, they are being asked to list their leisure contacts. Thirdly, the researchers a) collect socio-demographic information on each contact the respondent has so far listed, and capture information about the relationship the respondents maintains with each contact on the list. In this context the survey participants are being asked when a particular relationship was established, by which contact modes and frequency it is maintained, and whether the relationship can be labelled as ‘strong’ or ‘weak’.

The fourth and last part of the questionnaire is a sociogram asking participants to mention groups of people within their leisure network that socialise with each other (cf. Kowald et al., 2009; Kowald & Axhausen, forthcoming).

The fit between sample and target population (the population of Switzerland) has so far turned out to be good. The figures summarised in Table 1 were calculated for the participants’ personal network contacts that are connected to each other (recall the approach to personal networks discussed in relation to Figure 2c). As there is much variation between the networks, averages are provided as robust measures, such as the median and the absolute deviation of the median.

<INSERT TABLE 1 ABOUT HERE>

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5 Because the study interest is not limited to persons with specific characteristics, neither in terms of egos nor alters, the personal network approach was chosen over collecting network data in an institutional setting. Two name generators being used to ask egos for their leisure and emotionally important contacts. A name generator is a set of questions that should help the ego to recall all alters from his or her network. Obviously it is very important to choose the appropriate questions that will elicit the network members that are. For details on the used name generator methodology see Marin, 2004; Marin and Hampton, 2007 relevant for the study (cf. Carrasco et al., 2006; Marsden, 2005; van den Berg et al., 2008).

6 This step also involves two proxy-questions: The respondent is asked to specify with whom they discuss important problems and whom they ask for help in urgent situations. A relationship is defined as strong, when an ego discusses important problems with the same alter whom they also ask for help in urgent situations. Ego and alter are assumed to be weakly connected when the answer to one or both questions is “no”. Details of this survey instrument are provided in Kowald et al., 2009; Kowald & Axhausen, forthcoming.
Comparing Personal Networks by Age

Table 1 provides a summary of the data describing the structure of the surveyed personal networks. The average network consists of 20 social contacts, of which seven are “isolates”, whereas the remaining 13 “alters” join at least some of the other “alters” in their free time. The average network structure includes three groups of adults in the network that socialise with each other - commonly known as cliques. With increased age the number of nodes declines faster than the number of ties – resulting in a relatively high network density value\(^7\) (see also Kowald and Axhausen, forthcoming). Generally speaking, adults aged 75 and over have less clustered\(^8\) and consequently denser but also more distant and weaker relations, compared to an average personal leisure network.

\<INSERT FIGURE 4 ABOUT HERE>\n
The data in Figure 4 suggests that older people tend to meet contacts in their personal network in person, but also use technological means to stay in touch with others. Face-to-face contacts decrease with increased distance across all age groups. The frequency of face-to-face contacts between people that live locally declines more steadily with age. The use of email activities tends to be fairly similar across all age groups. Although people aged 75 and over do send emails to others, this age group does not use online chat facilities and use SMS less frequently than other groups. It seems fair to conclude from this that more senior members in our society engage, albeit to different extents, in all available social networking activities.

\(^7\) A median density of 0.4 is already high, indicating that most graphs in this sample are well integrated. Density values above 0.5 are the exception - indicating that the cliques within a personal network are, on average, only sparsely interconnected (see also Kowald and Axhausen, forthcoming).

\(^8\) In this context the term “clustered” is being used to describe a network that entails many subgroups. A network that is less clustered entails only few subgroups.
This network survey particularly focuses on describing a person and his or her personal network attributes, and the links between different networks. It does not address more specific questions, such as why respondents are asking a specific person for help in urgent situations. For example, is there a link between the help required and the profession and skill level of the contacts that are being approached for help.

However, the survey collects information about the geographical distance between the one asking for help and the potential helper and the means by which the former contacts the latter. Although no definite conclusion can be derived from these data as yet\(^9\), the available evidence complements more traditional accounts, such as the work of Solomon and Titheridge (2007), which addressed age-related differences in social and leisure behavior. This in itself constitutes a useful starting point for any further investigation.

**Further Research**

The purpose of this article was to explore existing knowledge about the means by which older people, who are willing to, can activate members in their social network to access help with basic home improvements. Our discussion focused on research that describes older people’s social networks and leisure behavior. We highlighted in particular two strong theoretical branches with the potential to eventually merge into one cohesive theoretical construct.

So far only one study formally describes the connections between personal and global networks, geographic distance and leisure behavior in a national context – demonstrating that formal social network studies can easily integrate variables, such as geographical distance. It has hopefully also clarified the usefulness of formal social network analysis as a universal tool to formally define and analyse social collectives, such as our hypothetical network.

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\(^9\) The data that are being reviewed in this section are interim findings, generated between 2009 and 2011 from a Swiss sample population, and should be regarded as such.
Let us return to this example one last time. In contrast to his wife, Sarah’s Dad believes that his domestic help Pam is not doing a good job. He chooses to communicate his view to daughter Sarah (who employs Pam) via his son Steve. Why did he not directly call Sarah? We know that Sarah lives 200 miles or one phone call away. Steve, in contrast, visits his parents occasionally. From a traditional perspective on older people’s leisure behavior we would, maybe, argue that distance is the key factor impacting his leisure behavior – in this case his ability to speak directly to Sarah. From a social network perspective we would describe his link to Sarah as weak, and both men as sharing strong affectionate and support relationships. Thus, we would, maybe, conclude that Steve and his Dad share such a strong link that the Dad chose to ask Steve to contact Sarah.

We believe that each explanation is incomplete without the other. Sarah’s Dad – possibly due to age related communication barriers- might prefer face-to-face contacts. This barrier might have eventually altered the strength of the daughter-father relationship – resulting in a slow decline of trust. It needs many more researchers asking questions like the above to fully understand the potholes in our present understanding of older people’s social and leisure behavior.
Acknowledgments

The understanding and interpretations presented in this article owe much to the knowledge and work of researchers in the UK: Professor Leonie Kellaher (London Metropolitan University) and the Accessibility and User Needs in Transport for Sustainable Urban Environments research consortium (www.aunt-sue.info). The authors are greatly indebted to Dr Jo Foord for her invaluable editorial support.

References


Table 1  Leisure networks’ topology, only egos which mentioned alters (n = 735)

<table>
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<tr>
<th></th>
<th>Median (65+) (n = 102)</th>
<th>Median (75+) (n = 43)</th>
<th>Minimum</th>
<th>Maximum</th>
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<th>Median</th>
<th>75% percentile</th>
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Figure 1: Social Network Example
Figure 2: Differentiating support from networks based on affection/cognition

2a) Cognitive Ties

2b) Support Ties

___ weak tie
___ strong tie
 .......... tie based on email exchange

___ tie based on face-to-face conversation
 _ _ _ tie based on telephone conversations
Figure 3: Different levels of analysis for Sarah’s mum’s personal network

a) 

b) 

c)
Figure 4: Absolute frequency of contact by age, distance and means of communication