Age-segregation in later life: an examination of personal networks

PETER UHLENBERG* and JENNY DE JONG GIERVELD†

ABSTRACT

In a rapidly changing society, young adults may play an important role in teaching older adults about social, cultural and technological changes. Thus older people who lack regular contact with younger people are at risk of being excluded from contemporary social developments. But how age-segregated are older people? The level of age-segregation of older people can be studied by examining the age-composition of personal social networks. Using NESTOR-LSN survey data from The Netherlands, we are able to determine the number of younger adults that people aged 55–89 years identify as members of their social networks, and to examine the factors that are associated with segregation or integration. The findings show that there is a large deficit of young adults in the networks of older people, and that few older people have regular contact with younger non-kin. If age were not a factor in the selection of network members, one would expect the age distribution of adult network members to be the same as the age distribution of the entire adult population, but the ratio of actual to expected non-kin network members aged under 35 years for those aged 65–74 years is only 0.10. And only 15 per cent of the population aged 80 or more years has weekly contact with any non-kin aged less than 65 years. The number of children is strongly related to the total number of younger network members, because most younger network members are adult children. Further, participating in organisations (work and volunteer settings) that include people of diverse ages increases the likelihood of an older person having significant cross-age interactions with non-kin.

KEY WORDS – age-segregation, social networks, older adults, adult children, non-kin relationships.

Introduction

Margaret Mead (1970) argued that in societies where change is slow and imperceptible, knowledge and culture are passed on from older generations

* Department of Sociology, University of North Carolina, Chapel Hill, North Carolina, USA.
† Netherlands Institute for Advanced Study in the Humanities and Social Sciences, Wassenaar, and Department of Sociology and Social Gerontology, Vrije University, Amsterdam, The Netherlands.

to younger ones. In these traditional settings, she suggested, it is essential for older people to teach newcomers how to function in the society. In contrast, in modern societies where social and technological change is pervasive, it also is necessary for younger people to teach the old. If older people do not interact with and learn from younger people, they risk becoming increasingly excluded from contemporary social developments as they age through later life. Older people may not need or want to know everything that younger ones know, but acquiring some new knowledge is essential to avoid becoming marginalised in later life. The most common example of what the young can currently teach the old is how to use email and the Internet, but many other areas of new knowledge created by cultural change could be described. In either traditional or modern societies, therefore, age-integration is needed if all generations are to be productive participants in the society. Of course there are additional reasons why it would be mutually beneficial for older and younger people to interact with each other. Older people may have resources that could promote the well-being of younger people (and *vice versa*). The absence of interaction, or age-segregation, promotes ageism and insensitivity to the challenges faced by others who differ in age. In general, it seems likely that age-integration promotes a more civil society. In this paper we take the perspective of older people and explore the level of their integration with, or segregation from, younger adults.

One way to examine the level of age-segregation of older people from younger ones in contemporary society is to examine the age-composition of personal social networks. How diverse are the ages of those with whom individuals interact most frequently and most significantly? Age-integration at the level of personal networks is relevant because network members play an important role in integrating individuals (of any age) into the larger society. Through network members, information and ideas are shared, new ways of thinking and living are discussed, and advice is exchanged. Network members exchange social, emotional, material and informational support that promotes well-being. Through networks individuals are recruited into social movements and organisations, which provide further opportunities for developing personal bonds (Marsden 1988; McPherson, Smith-Lovin and Cook 2001). Thus it is likely that older people whose personal networks lack younger members may be excluded from full participation in the society in which they live.

A first indication of how significant may be age-segregated personal social networks is shown in Table 1, which presents data collected in the United States in 1985 by the *General Social Survey* (GSS) (Burt 1985). Respondents were asked to identify those with whom they had discussed important matters over the last six months. The characteristics (such

TABLE 1. *Age distribution of 'core discussion partners' by respondent's age-group and the relationship and age of the partner, United States, 1985*

| | Partner's age (years) | | | |
| | Non-kin (%) | | Kin[1]% | |
Respondent's age (years)	<36	>53	<36	>53
19–30	83	3	32	28
61+	6	72	24	42

Note: 1. excluding spouses.
Source: derived from the 1985 Us General Social Survey, reported by Burt (1991), Figure 4.

as age and relationship to the respondent) of up to five discussion partners were recorded. Young adults in this survey reported that only 3 per cent of their non-kin discussion partners were over 53 years of age, and those aged over 60 years reported that only 6 per cent of their non-kin discussion partners were aged under 36 years. In other words, very little discussion of important issues occurred between older and younger adults who were not related by kinship. A quite different age pattern occurred however when the discussion partners were kin (excluding spouses). In this case, about one-fourth of the discussion partners of young adults were over age 53 years, and about one-fourth of the older people's discussion partners were under 36 years of age. This pattern suggests that family and kinship may provide a basis for age-integration that is missing in other social contexts.

Using data collected in The Netherlands in 1992, this study examines more thoroughly the age-composition of social networks of older people, and the role of family and kinship in limiting age-segregation. The study has two goals: to describe the age-composition of the personal networks of older people, and to identify the factors that lead to more or less age-integrated or segregated networks. The first question we ask is: How much age diversity is evinced in the kin and non-kin networks of respondents by the Dutch survey, which uses a different approach for identifying network members than the GSS? Attention is then directed specifically to the role of adult children in limiting age-segregation. How important is the number of living children that an older person has for the age-composition of his or her kin and non-kin social networks? Finally, using a multivariate analysis, we explore more generally the factors associated with the age-composition of the non-kin personal networks of older people. Based on the results of the analyses, several issues for the future of the age-integration or segregation of older people are discussed.

Forces promoting age homophily in networks

The social forces that have produced the institutionalisation and age-related stages of the life course over the past two centuries are also likely to have lead to widespread age-segregation in social networks (Kohli 1988). Consider, for example, the structured social contexts from which network members might be drawn. A structured pattern of age-segregation begins early in life, for educational institutions use single years of age to group most children throughout childhood, while nurseries and day-care anticipate the age-homogeneity of the school environment from soon after birth. Sports and music for children are often tied to school, and result in age-segregated activities after school and on weekends. Churches imitate schools by establishing Sunday schools, where children are taught in age-homogeneous groups. Laws forbid children to participate in work settings. Specialised doctors see children; specialised therapists counsel and work with children; and special courts deal with children. The separation into homogeneous age groupings is further promoted by television, movies and other forms of entertainment that target children of particular ages. Quite similar institutional forces now largely segregate adolescents and young adults to age-homogeneous networks and activities (Lofland 1968). In these ways a culture that emphasises age-homogeneous groups is established early in life, so that one expects to find a deficit of older people in the personal networks of children and young adults, and *vice versa*. In somewhat similar ways, the age-segregated social institutions encountered by older people encourage age-homogeneity in personal networks through later life.

Work organisations tend to exclude people past age 60 or 65 years from a significant life activity, excluding them from one mechanism that promotes integration and some cross-age interactions with younger adults. Old people continue to be excluded from mainline educational settings (Hamil-Luker and Uhlenberg 2002). When efforts are made to involve older people in educational activities, they often operate from an age-segregationist principle, with separate programmes for old people. Many older people report that participating in church or other religious activity is their most significant social activity outside the family. But in church people often are grouped on the basis of age for activities, so older churchgoers interact with other old people, and their social networks remain age-homogeneous. Participating in a senior centre or other age-restricted organisation may increase social activity and help expand social networks, but also reinforce age-segregated interactions. Similarly, nursing homes, retirement homes and retirement communities promote extreme age-segregation towards the end of life. In many ways,

therefore, older people encounter a society that restricts opportunities for developing age-integrated personal social networks.

Although age-composition has seldom been the focus of studies of personal social networks, several report interesting findings on age homophily (and homogeneity) in networks. A recent review of the literature on homophily in social networks concludes that age consistently creates strong divisions in personal networks (McPherson *et al.* 2001). In his studies of Detroit men and Northern California residents, Fischer (1977, 1982) reported striking age-homogeneity in non-kin friendship networks. Indeed, 72 per cent of the close friends of the Detroit men were within eight years of their own ages. Similarly, Feld (1984), analysing the Northern California data, found that approximately half of all non-family associates with whom respondents were sociable or discussed problems were within five years of their age. In her analysis of friendship structure, Verbrugge (1977) reported that half of the friends identified by Detroit men occupied the same 10-year age category as the respondent, as did over 40 per cent of the friends of respondents in a German survey. And, as noted above, the GSS study of discussion-partner networks found most non-kin partners to be similar in age (Burt 1991; Marsden 1988). In general, studies have found age-homogeneity in non-kin networks across respondents of all ages, although it is stronger among younger than older people.

As already suggested, however, much less age-homogeneity is observed in kin networks (Burt 1991). This is not surprising, because older people often identify the relationships with their adult children, who tend to be 20 to 40 years younger than themselves, as very important. The 1988 *National Survey of Families and Households* showed that two-thirds of older women in the United States who had children visited a child at least once a week, and over 80 per cent had weekly contact with a child (Uhlenberg and Cooney 1990). Other surveys consistently support this evidence of the high involvement between older people and their adult children (Dykstra and Knipscheer 1995; Lawton, Silverstein and Bengtson 1994; Rossi and Rossi 1990; Spitze and Logan 1990; Umberson 1992). Not only do inter-generational ties involve a high level of communication, but also these relationships are generally reported to be emotionally close and significant for instrumental support (for a review see Lye 1996). Furthermore, other kin (parents, aunts and uncles, siblings, cousins, grandchildren, and nieces and nephews) of diverse ages are frequently cited as significant network members. Thus one would expect the age-heterogeneity of personal networks to vary by the number of kin who are included in the network. The primary factor affecting the number of kin in a network is kinship composition. Other family-related events may

affect how often older people include kin in their personal networks. In particular, partner status and partner history are relevant, *e.g.* adult children tend to intensify social interactions with a recently widowed parent who had been in a first marriage (Lopata 1996; Wolf, Freedman and Soldo 1997), and an earlier parental divorce reduces the likelihood that adult children interact frequently with their fathers in later life (Doherty, Kouneski and Erickson 1998; Dykstra 1998; Furstenberg, Hoffman and Shrestha 1995; Jong Gierveld and Dykstra 2002; Lye *et al.* 1995).

There is little empirical research to guide our understanding of the factors that affect the age-heterogeneity of non-kin network members, but theoretically we can identify several factors that make a difference. One would expect, of course, that the probability of a network including younger non-kin would increase with the total number of non-kin in the network. More interesting, it is likely that older people have more opportunities to recruit network members of diverse ages when they are active in social contexts that include younger adults. Therefore we anticipate that employed people are more likely than the retired to identify younger non-kin as network members. Similarly, attending church regularly or engaging in volunteer activities might promote greater age-integration, if these occur in age-heterogeneous contexts. The age-composition of the neighbourhood could also be a factor influencing the likelihood of interacting with younger adults. In addition to these structured settings for recruiting non-kin network members, current and past family context may also be relevant. Marital and partner status might be related to the size and intensity of non-kin network relationships. Older adults who are embedded in a large kinship circle, including a partner, children, children-in-law, grandchildren and siblings, need to invest a lot of time in maintaining these social and supportive relationships. In general, therefore, they have less time and energy than others to invest in a varied set of non-kin contacts (Dykstra 1995). Some widowed older adults who live without a partner may intensify contacts with their children, but others may revive latent bonds with others. The latter are to an extent building a new social network of people outside their own household that includes non-kin relationships. Indeed, success has been reported for a special training programme to support widowed older adults to begin new relationships (Stevens 2001). It is not yet known how age-heterogeneous the new relationships formed by widowed persons are.

Adults who divorce and remain without a partner may also compensate for the reduction in the size of the social networks. Personal contacts with new friends, with people 'in the same boat', may be established in order to rebuild a social network. Those who never formed a partner union and the

childless are however in a different position and do not experience the same transition. They often rely on siblings, friends, neighbours and other kin and acquaintances (such as colleagues and co-members of sport and hobby clubs) to maintain social participation and integration (Dykstra 1995). The never-married especially have been found to have a varied network of long-standing non-kin relationships (Wagner, Schütze and Lang 1999). There are no empirical data about differences between old and new non-kin relationships, and whether there are age-discrepancies between older adults and their newer network members. It is expected, however, that in the filtering of candidates for friendships and active neighbour relationships, age differences are less important during later life than in childhood or young adulthood.

This interpretation of the literature on networks, kinship and ageing leads to several hypotheses. First, we expect that young adults are under-represented in the personal networks of older people. Second, that the presence of young adults in the personal networks of older people becomes increasingly rare at the more advanced ages. Third, it is expected that a disproportionate number of the younger network members of older people will be kin rather than non-kin. Fourth, the number of living children should be positively associated with having younger kin network members, but not with having younger non-kin network members. Fifth, the likelihood of having younger non-kin network members is higher for those who are employed, attend church, do volunteer work or live in age-integrated neighbourhoods. Sixth, the likelihood of having younger non-kin network members is higher for currently widowed and divorced older adults, who may have renewed and broadened their personal networks, than for those who are currently married, who tend to maintain their past couple-oriented social contacts. Seventh, the larger the number of friends, neighbours and other non-kin in an older person's network, the more likely that there will be young non-kin in the network.

As this study is exploratory, we also include in the analysis two variables of interest but without hypotheses of their effect, namely sex and the educational level of the respondent. One might expect older women from these Dutch cohorts to have less non-family social interaction than men, and hence to have less age diversity in their non-kin networks, but it is also possible that women possess superior social skills that allow them to bridge age barriers more easily than men. Higher levels of educational attainment are associated with higher levels of geographical mobility, so may reduce the breadth of network members that develop over time in a small community. But more education could also be associated with less ageism and greater acceptance of cross-age relationships.

Data and methods

Participants

This article examines data from the *NESTOR-Living Arrangements and Social Networks Survey* (LSN) (Knipscheer *et al.* 1995). The survey conducted face-to-face interviews in The Netherlands in 1992 with 4,494 respondents, and they constituted a stratified-random sample of men and women aged 55 to 89 years. The sample was selected from the registers of 11 municipalities: namely the City of Amsterdam and two rural communities in the west of the country, the City of Oss and two rural communities in the south, and the City of Zwolle and four rural communities in the northeast. The response rate was 62 per cent. The weighted sample can be considered representative of the population aged 55–89 years in The Netherlands (Broese van Groenou *et al.* 1995). Most respondents lived at home: 1,298 (29 per cent) lived alone in a one-person household, 2,582 (57 per cent) lived with a partner, 206 (5 per cent) lived in some other kind of multi-person household and 351 (8 per cent) lived in an institution such as a nursing home, home for the aged or psychiatric hospital. Only men and women who provided full information about their social network are analysed in this study ($N=4,032$). Network data are missing for respondents with serious health problems because they could only answer a short version of the questionnaire.

Measures

The survey questionnaire concentrated first on the living arrangements of the respondents. Using a life history perspective, respondents were asked to provide a complete household history, including information about the start and dissolution of partner relationships. Second, to delineate the respondent's social network each was asked to 'name the people you are in touch with regularly and who are important to you'. Only people above 18 years of age could be nominated. The 4,032 respondents who provided full information about their networks reported more than 56,000 network members. The nominated network members were partners, children (including step-children) and their partners, siblings, other relatives, neighbours, people from work and voluntary work, members of organisations (*e.g.* church congregations and political parties), friends and acquaintances. The contact frequency was measured on an ordinal scale with response categories ranging from 'never or almost never' to 'daily'. Subsequently a maximum of 12 network members per respondent were selected for in-depth investigation, giving priority to the network members contacted most frequently. For the 4,032 respondents, this procedure brought the number of network members down to 36,420. Basic information about the

'top-12' network members includes relationship to respondent, gender, age, marital status, length of time known and distance away. The age of the respondents' network members ranged from 18 to 102 years.

Basic socio-demographic information was collected about the respondents, including years of education (which varied from 5 to 18 years) and whether the respondent was employed at the time of the survey. Respondents were asked if they were a member of a church or other religious group and, if so, how often they attended its services or meetings. Answers to these questions have been summarised in a scale from '1', for not a church member and/or less than yearly participation, to '5', for a church member and weekly or more frequent participation. Volunteer work (no/yes) was elicited using the question: do you ever do unpaid volunteer work, for example in church or for a sports association, community centre, parent-teacher associations or similar? Neighbourhood age-composition has been measured by the percentage of persons aged 65 or more years in the neighbourhood, with data from *Statistics Netherlands*. Using information about partner status and partner history, older adults were characterised as in a first-partner relationship, never-married, currently widowed, currently divorced or repartnered.

Age-composition of networks

Actual versus *expected*

The first step is to determine whether there is a tendency for the personal networks of older people to be age-segregated. If individuals randomly select their adult network members from the entire population, then the age-distribution of the network members would reproduce the age distribution of the adult population. Assuming random selection, one can calculate for each cohort an 'expected' mean number of network members of specified ages, by multiplying the proportion of the adult population in the age group by the cohort's mean number of network members. For example, in 1992, 14.3 per cent of the adult (over age 18 years) population of The Netherlands was less than 25 years of age, while the NESTOR respondents aged 55–64 years reported an average of 9.8 network members aged 18 or more years. If there were no age bias in the selection of network members, one would expect members of the age group to have a mean of 1.4 network members aged under 25 years ($0.143 \times 9.8 = 1.4$). Similarly, one can calculate the expected mean number of non-kin network members in an age group by multiplying the proportion of the national adult population of those ages by the responents' mean number of non-kin network members. This simply assumes that non-kin network members

T A B L E 2. *Actual and expected[1] mean number of network members in selected age groups, by respondent's age and relationship to network member, The Netherlands, 1992*

Age and relationship to network member	Mean number of network members[2]									
	Below 25 years			Below 35 years			Below 45 years			
	act.	exp.	ratio	act.	exp.	ratio	act.	exp.	ratio	All ages
55–64 years										
Total	0.53	1.40	0.38	2.83	3.54	0.80	4.17	5.51	0.76	9.80
Non-kin	0.03	0.54	0.06	0.25	1.36	0.18	0.81	2.12	0.38	3.77
Kin[3]	0.50	–	–	2.58	–	–	3.36	–	–	6.03
65–74 years										
Total	0.17	1.35	0.13	1.34	3.41	0.39	3.47	5.31	0.65	9.44
Non-kin	0.01	0.49	0.02	0.12	1.23	0.10	0.41	1.92	0.21	3.42
Kin[3]	0.16	–	–	1.22	–	–	3.06	–	–	6.02
75–89 years										
Total	0.20	1.19	0.17	0.62	3.00	0.21	1.75	4.67	0.37	8.31
Non-kin	0.01	0.40	0.02	0.07	1.02	0.07	0.22	1.58	0.14	2.82
Kin[3]	0.19	–	–	0.55	–	–	1.53	–	–	5.49

Notes: 1. Expected number is based on the age distribution of the population of The Netherlands in 1991. 2. Each difference between the actual and expected mean numbers is significant at $p < 0.001$. 3. Includes spouses. act., actual; exp., expected.
Source: Authors' analysis of The Netherlands 'Living Arrangements and Social Networks of Older Adults' (NESTOR) survey, 1992 (n = 4,032).

are selected from the entire adult population without any regard to age. For NESTOR respondents aged 55–64 years, one would expect a mean of 0.54 non-kin network members aged under 25 years ($0.143 \times 3.77 = 0.54$). The 'expected' and the actual or reported mean numbers of network members are presented in Table 2. No expected number is reported for kin network members because we do not know the age distribution of the kin of the respondents. Clearly the age distribution of the kin of people aged 55–64 years is not the same as the age distribution of the entire population.

Three interesting findings are apparent from Table 2. Looking first at the ratios of the actual to expected number of network members, one sees in every comparison a deficit of the younger age groups (for all the ratios are below 1.0). Each difference between expected and actual mean number is highly significant. The most extreme deficit occurs for the youngest ages, *e.g.* assuming random selection, the cohort aged 55–64 years had only 38 per cent of the expected number of network members aged less than 25 years, but 76 per cent of the expected number aged less than 45 years. The same pattern holds for each age group of older people, with the actual-to-expected ratios being lowest for the network members aged less than 25 years. The youngest segment of the adult population is therefore the most under-represented in the personal networks of older people.

Second, it appears that with increased age, the members of personal networks grow older and contain progressively fewer young adults. For the cohort aged 65–74 years at the time of the survey, the actual number of network members aged less than 25 years was only 13 per cent of the expected, while for the cohort aged 55–64 years it was 38 per cent. This pattern holds for every comparison: examining the ratio columns of Table 2, they fall with each decrease of age except in one case (the ratio for less than 25 years of age is slightly higher for those aged 75–89 years than for those aged 65–74 years). This finding is expected because it reflects the ageing of whole networks over time and the tendency for all ages to fraternise with age peers. Nevertheless, it also points out the increasingly severe deficit of young network members as people age. The data discussed thus far confirm the expectation of overall age-segregation in the personal networks of older people.

The third noteworthy finding in Table 2 is the striking absence of young adult non-kin members in the networks of older people. People aged 55–64 years had on average only 0.25 non-kin network members under 35 years of age, and those aged over 75 years had even fewer, an average of 0.07. In other words, very little interaction occurred between older and younger adults who were not related, and this was especially true for those at the oldest ages. If age were not a relevant factor in the choice of network members, people aged 75–89 years would have had an average 1.58 non-kin associates aged less than 45 years, instead of the 0.22 that they actually reported. If it were not for family and kin ties, most people past retirement age would lack intimate contact with any adult less than 45 years of age. Those aged 65–74 years had a mean of 0.41 non-kin network members aged less than 45 years, and those aged 75–84 years had only 0.22. On the other hand, Table 2 indicates that many older adults do have younger kin whom they consider to be important network members. The importance of adult children as younger network members for people aged more than 55 years is made clear in Table 3.

Role of adult children

Table 3 presents the mean number of younger network members who were seen at least weekly by the respondents, and disaggregates the results by the number of living children. The data are restricted to network members who are seen frequently (weekly or more often) for two reasons. First, it makes the definition of a network member more consistent, because individuals who were seen only occasionally and considered to be network members by some but not others are not included. More importantly, it eliminates much of the bias associated with the survey's

T A B L E 3. *Mean number of network members seen at least weekly (total, children, non-kin) in selected age categories, by respondent's age and number of children alive, The Netherlands, 1992*

	Mean number of network members								
Age and number of children	>25 years			>35 years			>45 years		
	Total[1]	Child	Non-kin	Total[1]	Child	Non-kin	Total[1]	Child	Non-kin
55–64 years									
Total	0.47	0.43	0.03	2.46	2.19	0.21	3.50	2.70	0.66
0 child	0.09	0.00	0.04	0.54	0.09	0.28	1.11	0.11	0.72
1 child	0.25	0.18	0.01	1.46	1.10	0.25	2.38	1.37	0.76
2+child	0.56	0.52	0.03	2.88	2.56	0.20	4.01	3.26	0.64
65–74 years									
Total	0.13	0.07	0.01	1.08	0.91	0.09	2.72	2.30	0.30
0 child	0.05	0.00	0.02	0.33	0.05	0.13	0.99	0.10	0.57
1 child	0.06	0.02	0.00	0.56	0.39	0.07	1.46	1.03	0.30
2+child	0.15	0.09	0.01	1.27	1.08	0.08	3.19	2.84	0.26
75–89 years									
Total	0.10	0.00	0.01	0.34	0.12	0.05	1.10	0.75	0.14
0 child	0.04	0.00	0.01	0.17	0.02	0.07	0.40	0.05	0.18
1 child	0.10	0.00	0.00	0.36	0.05	0.05	0.81	0.34	0.17
2+child	0.12	0.01	0.01	0.38	0.14	0.05	1.33	1.00	0.13

Note: 1. Total is equal to children and non-kin plus other kin and partners.
Source: As for Table 2.

recording of age for only the 12 most frequently seen network members. This cut-off limit meant that respondents with large networks reported only some of their contacts, while those with 12 or fewer network members reported all. About 90 per cent of all network members who were seen weekly were included in the top 12 identified members, so the bias was not large. By comparison, network members contacted less frequently were included in the top 12 only for the respondents with small networks, for only 28 per cent of those seen monthly or less often were retained. The data in Table 3 can therefore be viewed as a relatively complete representation of the adults aged less than 45 years with whom the older people interacted frequently.

The most striking finding in Table 3 is the extent to which the age-composition of the personal networks of older people varied by the number of living children. Those with none had highly age-segregated networks; those with many children had highly age-integrated networks. More specifically, the mean number of network members aged less than 35 years was only 0.54 for childless people aged 55–64 years, compared to 2.88 for similarly aged people with two or more children. The reason for the strong relationship between number of younger network members and
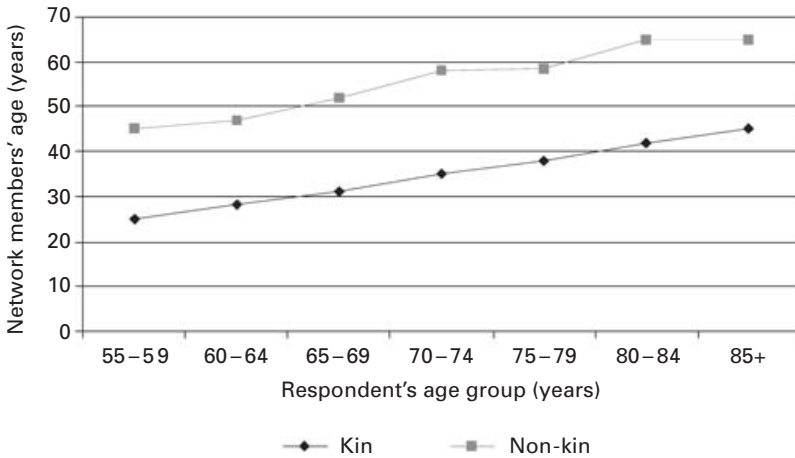
Figure 1. Median age of youngest kin and youngest non-kin network member by
age of respondents.

family size is obvious: most younger network members who were con-
tacted frequently by older people were their children. About 84 per cent of
the network members under age 35 years identified by respondents aged
55–74 years were children (or children-in-law) of the respondents. If it were
not for adult children, older Dutch people would have little interaction
with people aged less than 45 years.

In summary, older people interact frequently with very few younger,
non-kin network members. The new information in Table 3 is that the
number of young adult non-kin network members differs little by number
of children; those who do not have children as network members do not
compensate by developing relationships with other young adults. Further,
there is no support from these data for the argument that older people add
young associates of their adult children to their networks. The friends and
associates of one's children may however provide a connection for many
older people to the younger population in a way that was missed by the sur-
vey. Either through direct encounters with their children's associates, or
through conversations about them with their children, older people may
gain a broader awareness of what is happening in the lives and experiences
of young adults.

Ageing and youngest adult network member

Another perspective on age-segregation in later life is provided in Figure 1,
where the median age of the youngest network member is shown for each
five-year age group. As expected, the median age of the youngest kin

member was much lower than that of the youngest non-kin member, and the median age of the youngest network members increased with the age of the respondent. But most interesting is the very high median age of the youngest non-kin network member for the oldest age groups. For respondents aged 80 or more years, half did not identify any non-kin member less than 65 years old, but even this figure does not fully capture how many of the oldest members of society failed to interact with any non-kin person who was not old. The median age is calculated only for respondents who report that they have one or more non-kin network members, but 19 per cent of the respondents aged 80 or more years had no non-kin network members. Therefore, 64 per cent of the population aged 80–89 years had no significant interaction with anyone outside their families who was not old (*i.e.* they had no non-kin network member less than 65 years old). About 85 per cent did not have weekly contact with any non-kin person younger than 65 years.

What leads to more or less age-integration?

Any younger member

It is clear from the above analyses that a majority of the younger network members identified by older people are kin, and that family size is the most important factor determining the level of age-integration of the personal network of an older person. Nevertheless, there is diversity among older people with respect to the presence of younger non-kin in their networks. Only about half (51 per cent) of the respondents reported having one or more non-kin network members whom they saw weekly and who were at least five years younger than themselves. Using this very broad definition of 'younger', the first multivariate analysis seeks to identify the factors that differentiated those who had at least one younger non-kin network member from those who did not. The second multivariate analysis was restricted to those with at least one younger non-kin member and examines the factors associated with the age gap between an older person and the youngest non-kin person with whom he or she interacted frequently. This analysis seeks to identify the factors that contribute to the formation of more age diverse networks.

    Table 4 presents the results of the logistic regression analysis that compares respondents with and without a younger non-kin person in their networks. Model 1 examines the effects of age, sex and educational level on the dichotomous outcome. Only education was found to be significant; an increasing level of education associated with a greater likelihood of having at least one younger non-kin person in the network. As can be seen

TABLE 4. *Variables predicting having weekly contact[1] with a younger[2] non-kin network member, The Netherlands, 1992*

Predictor	Model 1 Exp (B)	Model 2 Exp (B)	Model 3 Exp (B)
Age of respondent	1.00	1.01[+]	1.03***
Sex	1.03	1.00	0.84*
Educational level	1.04***	1.03*	0.93***
Employed? no/yes		1.47**	1.78***
Frequency church activities		1.03	1.02
Volunteer work? no/yes		1.61***	1.17
Percentage 65+ in neighbourhood		1.00	0.98**
Number children in network		0.90***	1.04
Never married? no/yes		0.95	0.87
New partner after divorce or widowhood? no/yes		0.86	0.94
Single after widowhood? no/yes		1.22*	1.09
Single after divorce? no/yes		1.49**	1.64**
Number of non-kin in network			1.83***
-2 Log likelihood	5570.8	5473.4	4126.2
Percentage correct	52.9	56.2	74.4
Cox and Snell R^2	0.4%	2.8%	30.4%

Notes: 1. Odds ratios resulting from logistic regression analysis. 2. Younger network members are at least five years younger than respondent.
Significance levels: [+] $p<0.10$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$.
Source: As for Table 2.

from the reversal of the education effect in Model 3, the positive effect of education occurred because the more educated had a larger number of non-kin members in their networks.

Model 2 shows that respondents who were engaged in labour force or volunteer activities were more likely than others to have younger non-kin in their networks. This finding is consistent with the reasoning that these activities increase cross-age interaction. On the other hand, attending church did not have any effect, nor did the age-composition of the neighbourhood. Model 2 includes variables on partner history, and shows that frequent contact with younger non-kin was not significantly different for the never-married or repartnered than for those in first marriages. In contrast, those who did not repartner after divorce or widowhood were more likely to have weekly contact with younger non-kin network members. This outcome is consistent with the hypothesis that individuals who lose a spouse, especially in cases of divorce, tend to experience a sharp decrease in network size. These individuals may renew their networks by adding new non-kin members, including younger adults. Also seen in Model 2, those who mentioned many children among the top 12 network members tended to have fewer young non-kin members in their networks. Because having many children displaces some non-kin from the top-12

network, when total number of non-kin is controlled for (Model 3), the effect of number of children in the network becomes non-significant.

Adding number of non-kin to the equation (Model 3) as expected increased our ability to predict whether or not someone had a younger non-kin member in their network. Overall, having more non-kin in the network increased the odds of younger non-kin being included. Entering number of non-kin in the equation reduced the effect of volunteer activity, presumably because volunteering increased the size of the personal network. Similarly, controlling for number of non-kin made the effect of living alone as a widowed person insignificant. It is interesting to note, however, that among currently divorced individuals, the greater likelihood of frequent contact with younger non-kin was not explained by the higher number of non-kin members in their networks than in married persons' networks. It is likely that in renewing their networks after divorce, they are attracted to others who also experienced divorce, and most other currently divorced people are younger adults. Including number of non-kin has the effect of making the coefficient for neighbourhood significant, for living in an older neighbourhood reduces the likelihood that an older person has frequent interaction with any younger non-kin person.

Age of youngest member

The following analysis is restricted to respondents who had weekly contact with at least one younger non-kin network member, and uses the age differential between the respondent and the *youngest* non-kin member in the network as the dependent variable. The age differential, an interval variable, ranged from 5 to 69 years. Hierarchical regression analysis was used to test the significance of the same set of variables as in the preceding analysis as predictors of the age gap, and the results are shown in Table 5. Model 1 includes only three predictor variables: age, sex and level of educational attainment of the respondent. As expected, the coefficient for age is positive and highly significant. This outcome simply shows that with increasing age, the age gap between a respondent and his or her youngest network member increased. Other analyses (not shown) show that the absolute age of the youngest non-kin tended to increase with the age of the respondent. In addition, both age and education were found to have a significant effect on the outcome. Among older people, men tended to have more younger non-kin adults in their networks than women, and sex remained a significant predictor when other variables were added to the multivariate analysis (Models 2–3). Higher educational attainment was associated with a greater range in age of young non-kin, but this variable did not remain significant when additional variables were introduced.

T A B L E 5. *Variables predicting age deviation between respondent[1] and youngest non-kin network member, The Netherlands, 1992*

Predictor	Model 1 β	Model 2 β	Model 3 β
Age of respondent	0.21***	0.26***	0.30***
Sex	−0.07**	−0.06**	−0.07**
Educational level	0.06**	0.03	−0.02
Employed? no/yes		0.08***	0.08***
Frequency church activities		−0.01	−0.02
Volunteer work? no/yes		0.06**	0.05*
Percentage aged 65+ in neighbourhood		−0.04*	−0.06**
Number of children in network		−0.11***	−0.04 +
Never married? no/yes		0.01	0.01
New partner after divorce or widowhood?[2] no/yes		0.01	0.01
Single after widowhood? no/yes		0.01	0.00
Single after divorce? no/yes		0.04 +	0.04 +
Number of non-kin in network			0.21***
Adjusted R^2	5.0%	7.0%	10.5%

Note: 1. Results of hierarchical regression analysis for respondents with at least one non-kin network member who is at least five years younger than respondent. 2. Divorce or widowhood.
Significance levels: + $p<0.10$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$.
Source: The Netherlands 'Living Arrangements and Social Networks of Older Adults' (NESTOR) survey, 1992 (n=2,073).

Our primary interest is in Model 2, which includes several variables indicating structured social contexts that might affect opportunities for developing age-heterogeneous non-kin network members. The expectation that the social contexts in which older people live affect the level of cross-age interactions is generally confirmed, although not all variables have a significant effect. Being employed and/or engaging in volunteer activities were strongly associated with a wider age difference between the respondents and the youngest non-kin network member, and living in an older neighbourhood appears to have reduced the age gap (percentage of neighbours aged over 65 years was significant in Model 2, and became more significant in Model 3 when other variables were included). There was, however, no indication that level of church involvement increased the likelihood of frequent interaction with younger adults.

Also of interest in Model 2 are the coefficients for partner status. Currently divorced (but not widowed) older adults had more age-diversity in non-kin relationships than the currently married, and those who mentioned a high number of children among the top 12 network members had significantly smaller age differentials with their youngest non-kin social network member. The influence of the number of network members of particular types on the age gap with youngest non-kin adult is examined in Model 3. We expected that, other things being equal, having more non-kin network

members would increase the likelihood of the network being more hetero-geneous in age. This expectation is confirmed by the finding that having more friends, more neighbours and more 'other' non-kin in a network increased the span of cross-age interactions. As in Table 4, including the number of network members in the model reduced the significant effects of volunteer activities and of more children among the top 12. Presumably involvement in volunteer activities increased the age-span of network members by increasing the total number of non-kin in the network, which in turn increased the odds of one of them being much younger.

Discussion

Despite the potentially significant implications, previous research has not examined the extent to which people in later life regularly interact with young adults. Using data from The Netherlands, this study has provided evidence on the extent to which older people have age-integrated or age-segregated personal social networks. Further, it has explored the factors associated with diversity in the age-composition of the networks of older people. Several interesting and provocative findings have emerged, and it is hoped that they will stimulate further research.

First, there clearly is a deficit of young adults in the networks of older people. People aged 55–64 years have significantly fewer young adult network members than would be expected if age were not a factor in selection, and the deficit grows even larger for people over the age of 65 years. For example, those aged 75–89 years had only about one-fifth of the number of network members aged less than 35 years that would be ex-pected with complete age-integration. In fact, 68 per cent of the popu-lation older than 75 years did not identify any network member younger than 35 years of age.

Second, an overwhelming proportion of the younger network members identified by older people were kin. About 90 per cent of the network mem-bers aged less than 45 years old who were reported by people past age 65 years were kin, and a large majority of older people reported no non-kin less than 45 years of age in their networks. Most neighbours, friends and other non-kin associates of older people were old themselves. Thus the most crucial determinant of having younger network members is the size of the kin group, and especially the number of living children. Family building in the young adult phase of the life course turns out to be the major deter-minant of age-integrated or age-segregated personal networks in late life.

Third, although no segment of the older population appeared to be well integrated with younger adults outside of family relationships, several

factors did increase the likelihood that an older person had some signifi-cant cross-age interactions. These included participation in organisations that had members of different ages (*e.g.* work and volunteer settings), and living in a neighbourhood with a high proportion of non-old adults. A plausible explanation for the significance of these factors is that a necessary condition for forming cross-age associations is the opportunity for meeting people of different ages. The failure of church activity to foster more age-heterogeneous relationships may be because church attendance in The Netherlands is much higher among older than younger age groups. In other words, churches may not be strongly age-integrated settings. It also may be that simply occupying common space is insufficient to promote the development of cross-age relationships. Relationships develop when struc-tures promote mutual interaction around a meaningful activity, so while sitting side-by-side in a church service may have no effect, working together on a common project may be highly effective. Further, cultural norms are almost certainly important. When age differences are emphasised and age-stereotypes are prevalent, a significant barrier exists for forming friend-ships and close associations between young and old people.

Fourth, specific life course events, in particular divorce followed by living alone, increased the likelihood that an older person had some sig-nificant cross-age interactions with non-kin. Several studies have shown that shortly after divorce there tends to be a reduction in the number of personal relationships (DeGarmo and Kitson 1996). As time passes after a divorce, however, new relationships are formed. In this process of forming replacement relationships, there is an opportunity for younger non-kin to join the network.

Looking ahead, we anticipate two changes that could significantly in-crease the age-segregation of the personal networks of older people in The Netherlands. First is the ageing of the population, which will decrease the relative supply of younger adults as potential network members and in-crease the relative supply of older ones. Around the time of the NESTOR survey, about 34 per cent of the population aged over 20 years was in the age group 20–35 years, while 17 per cent was aged 65 or more years. By 2050, these two percentages will be reversed – 21 per cent of the adult population will be aged 20–35 years, and 33 per cent will be 65 or more years. The second and related change in future cohorts will be a significant decline in the average number of adult children. Because children are the major source of young adult network members, a decline in the number of children could have a large effect. Those aged 65 or more years in 1992 lived out their reproductive years when the Total Fertility Rate exceeded 3.0, but the cohorts entering old age in the near future will have completed family sizes of only about half that level. Further, the increasing prevalence

of divorce in future cohorts entering old age may lead to a weakening of the tie between parent and adult child for an increasing proportion of older people (Cooney and Uhlenberg 1990; Dykstra 1998; Jong Gierveld and Peeters 2003). The increase in the number of younger non-kin that is associated with divorce is far smaller than the loss of children from the network. Thus, unless other changes occur, older people in the future are likely to have even less interaction with young adults than they currently do – and as shown above, current levels of interaction are extremely low.

This prospect provokes the question of what changes might divert a trend towards even greater age-segregation of older people. If, as argued in this paper, non-kin network members tend to be recruited from structured social contexts such as workplaces, volunteer settings, educational organisations and neighbourhoods, more attention might be given to increasing the involvement of older people in social structures that include people of various ages. This line of thinking leads directly to the issue of institutional age-segregation, as occurs when chronological age is used as a criterion for participation. Matilda Riley called attention to the structural lags in major social institutions which denied opportunities to healthy and skilled people reaching old age to engage productively in society (Riley, Kahn and Foner 1994). The institutions which are most clearly structured by age are schools and places of work, but the rules and practices of many others create age-group separation. Age is embedded in the formulation and implementation of many social welfare policies and programmes, *e.g.* nutrition, housing, protective services and recreation. Concerns related to the old often fall under different government programmes and offices than do matters related to children and youth (Hagestad 2002). Even academic disciplines (such as gerontology) tend to sustain separation by age. There is, however, some evidence that the use of chronological age to structure the life course may have peaked.

A recent tendency to break down structural age barriers has been noted in both work and education (Riley and Riley 2000). Retirement in the United States has recently become more flexible, allowing an increasing number of older people to participate in the labour force. The long trend towards earlier age at retirement stopped in the mid 1980s in the United States, and since then labour force participation rates among those aged 55 or more years have been gradually increasing (Clark and Quinn 2002). The long-discussed idea of lifelong learning may now be happening, as an increasing number of people in mid and later life learn alongside younger people (Davey 2002). There are interesting examples in the United States of breaking down the age barriers around schools and creating community learning-centres open to all ages (US Department of Education 2000). In academic programmes, traditional gerontological approaches are being

challenged by a life course perspective that views ageing as a lifelong process. If, as suggested by these examples, institutional age-segregation is declining, opportunities for cross-age interaction should increase.

Related to institutional age-segregation is cultural age-segregation, as reflected in age stereotypes and ageist language. In addition to removing the barriers to cross-age interaction, a reduction in ageism and cultural age-stereotyping could facilitate age-integration. The prevalence of age-stereotypes in society hinders the formation of close non-kin relationships between older and younger people (Bytheway 1995; Hummert *et al.* 1994; Nelson 2002). There is of course some circularity in this association, because age-segregation is a root cause of age-stereotypes. Nevertheless, educational programmes and media efforts to combat ageist stereotypes and language might play a role in increasing understanding and empathy between disparate age groups. Similar efforts to reduce racism and sexism are generally considered to have produced positive results.

Attention is being given not only to ways of reducing structural and cultural barriers between older and younger people, but also to inter-generational programmes that purposely bring diverse ages together. In The Netherlands, a co-ordinated effort to bring older people into age-integrated settings is occurring through an inter-generational neighbour-hood development programme at *The Netherlands Institute for Care and Welfare* (Penninx 1999). A notable initiative from this inter-generational pro-gramme has involved the Dutch Guilds that exist in about 90 munici-palities. People who are aged 50 or more years and who are willing to share their knowledge and skills can form a guild that anyone can contact for assistance free of charge. A request for help, *e.g.* with car repair, tu-toring in school, business advice or care for a disabled child, is referred to an appropriate guild member who then responds directly to the individual needing assistance. Through this matching process, older volunteers and younger people are brought together in a context that is likely to promote positive inter-generational interaction. Other inter-generational pro-grammes described by Penninx include: children visiting older people living in age-segregated institutional settings, older people helping chil-dren in local schools, adolescent choreteams helping older neighbourhood residents with various household chores, and older people meeting with immigrant youth to promote their successful integration into Dutch so-ciety. Similar inter-generational programmes are developing in other countries.[1] Careful evaluations of the various types of deliberate efforts to bridge age gaps would provide useful information on what structures actually facilitate age-integration.

The questions raised in this paper about the inclusion of younger adults in the personal networks of older people are elements of a larger set of

questions about relationships and interactions across all ages in modern societies. Data limitations have restricted this study to the examination of relationships between older and younger adults from the perspective of older people. Interesting further questions include: To what extent are older people involved in meeting the needs of young children? How involved are children in meeting the needs of older people? What are the cultural barriers to the formation of friendships between old and young? What are the consequences for old and young of being age-segregated or age-integrated? To improve our understanding of the forces that create and sustain age-segregation, there is a need not only to pursue these questions but also for comparative studies across societies and across different segments in society. In short, there is a large research agenda for scholars who wish to examine critically the issue of the ways by which age divides people, or alternatively what promotes age-integration.

Acknowledgements

NOTE

1 For example, *Generations United* in the United States, which has information available online at http://www.gu.org/index.html; *United Generations Ontario* in Canada, at http://www.intergenugo.org/; and the *Centre for Inter-generational Practice in England* at http://www.centreforip.org.uk.

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Address for correspondence:
Peter Uhlenberg, Department of Sociology,
CB 3210, University of North Carolina,
Chapel Hill, NC 27599, USA.

e-mail: peter.uhlenberg@unc.edu