

## CONTACTS BETWEEN GRANDPARENTS AND GRANDCHILDREN

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### *Abstract*

*How much contact do Dutch grandparents have with their grandchildren, and how can differences in contact frequency be explained? In the 1992 NESTOR-LSN survey of 'Older adults living arrangements and social networks', a random group of 976 grandparents answered questions on the frequency and content of the contacts with each of their grandchildren. To explain differences in grandparent-grandchild contact frequency, we developed an integrative theoretical framework distinguishing the personal motives to invest in the relationship and the opportunity structure that inhibits or encourages interactions. Results from multilevel analyses involving three levels (grandparents, middle generation and grandchildren) show differences in contact frequency between grandparents, between the families of their children and between individual grandchildren. The frequency of grandparent-grandchild contact is more strongly determined by the opportunity structure than by personal motives. Nevertheless, the influence of personal motives cannot be disregarded. The middle generation plays a decisive role in mediating contacts between grandparents and grandchildren.*

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## Introduction

In a recent editorial commentary in the *Tijdschrift voor Gerontologie en Geriatrie* [Journal of Gerontology and Geriatrics], Diesfeldt (1999) stated that there was a dearth of social scientific literature on grandparenthood in the Netherlands. Publications on this topic are few and far between (Post, Van Imhoff, Dykstra & Van Poppel, 1997; Prins, 1994; Vermulst, De Brock & Van Zutphen, 1991). It is surprising that so little research has been conducted into grandparenthood in the Netherlands as there are sufficient societal reasons to study this subject. First of all, grandparenthood constitutes a relatively long phase in life. Given today's long life expectancy, people tend to be grandparents for more than a third of their lives. It is not unusual for the lives of grandparents and grandchildren to overlap for thirty years or so. At the same time, there are indications that grandparents play an important role within families. Grandparents are a vital link in informal child care arrangements in the Netherlands (Remery, Van Doorne-Huiskes, Dykstra & Schippers, 2000). Grandparents are also referred to as 'family watch dogs': they are not actively involved in the lives of their children, but are waiting in the sidelines, ready to step in when help is needed (Troll, 1983). Another good reason for studying grandparenthood is that it is interesting from the point of view of social integration. Our society is organized in such a way that people spend much of their time in 'age enclaves', each of which has its own culture and age-related activities. Families are one of the few environments in which people of different ages interact. Intergenerational contacts such as those between grandparents and grandchildren act as so-called cohort bridges (Hagestad, 1981) between people who have their roots in different historical periods.

This study into the contacts between grandparents and grandchildren seeks to fill a knowledge gap – at least, as far as the Netherlands is concerned. We will begin by posing a descriptive question: To what extent do grandparents have contact with their grandchildren? Our next question is: How can differences in the frequency of contact between grandparents and grandchildren be explained?

In this study, we shall strive to make a number of methodological improvements. Contrary to existing (mainly American) research based on small opportunity samples (see, for example, Leek & P.K. Smith, 1991; Sanders & Trygstad, 1989; M.S. Smith, 1991; Spruytte, Verschueren & Marcoen, 1999; Thompson & Walker, 1989), we shall use a large-scale sample that is representative of the elderly population of the Netherlands. Earlier studies have tended to focus on a single grandchild, usually the eldest or favorite grandchild (Kivett, 1985; Silverstein & Long, 1998; Spruytte, Verschueren & Marcoen, 1999), which provides a limited view of grandparent-grandchild relationships. In this study we have information about each grandchild of a particular grandparent. Since the amount of information we have about each grandchild is limited, however, we

will only formulate a relatively small number of hypotheses about the influence of grandchildren on the contact frequency with grandparents.

We shall also seek to contribute to theory formation. The theoretical basis of studies on the grandparent-grandchild relationship tends to be weak. Most research has tested isolated hypotheses or, at best, relatively simple theoretical models (Szinovacz, 1998). We have brought together insights from different theories. Some of these relate to the personal motives people have for investing in the grandparent-grandchild relationship. Others relate to the opportunity structure that promotes, or restricts the interaction between grandparent and grandchild. Table 1 gives an overview of the hypotheses that will be tested. As shown in Figure 1, we have included the characteristics of three family generations in our theoretical model: that of the grandparent, the middle generation and that of the grandchild.

## Hypotheses

### *Personal motives*

*Kinkeeping.* Kinkeeping theory focuses on gender differences in family relationships. According to this theory, women have a greater interest in investing in family relationships than men (Rosenthal, 1985; Rossi & Rossi, 1990; Troll, Miller & Atchley, 1979). Rossi and Rossi (1990) state that women's kinkeeping role is rooted primarily in biologically determined bonds with their children and grandchildren, strengthened by women's greater involvement in caring for and raising children. In addition, the gender socialization of girls focuses more on parenthood and the family than that of boys. The authors also point out that this could be caused by the fact that women tend to be less economically independent than men. They argue that women are more inclined to nurture ties with their families in case they need a financial safety net in the future. Elderly women in particular keep in contact with their families, and their daughters and granddaughters are trained to take over the kinkeeping role should this be necessary (Troll, 1994). Based on kinkeeping theory, we can *hypothesize* that (a) grandmothers have more contact with their grandchildren than grandfathers do, (b) grandparents have more contact with the children of their daughters than with the children of their sons, and (c) grandparents have more contact with granddaughters than with grandsons.

*Kin selection.* Gender differences in contacts between grandchildren and grandparents are central to both the kinkeeping theory and the sociobiological kin selection theory (Dubas, 2001). Although the usefulness and practicability of sociobiological theories are currently under discussion (see, for example, Freese & Powell, 1999), we still use these theories because they produce testable predictions about gender differences in the frequency of contacts between

grandparents and grandchildren, which are, in part, a further specification of kinkeeping theory.

Kin selection is based on the assumption that contacts within families are driven by a strategy aimed at creating the best possible spread of genes (Leek & P.K. Smith, 1991; M.S. Smith, 1991; P.K. Smith & Drew, 2002). According to this theory, individuals are selected not only to maximize their own genetic contribution to the next generation, but also to promote the reproductive opportunities of those who share their genes. One of the underlying ideas is that the greater the certainty of relatedness, the more people will be inclined to invest in kin relationships. According to the principle of paternity uncertainty, the certainty of relatedness is greater among mothers than it is among fathers. Doubts about one's biological fatherhood may always exist among men. And so the more mother-daughter relationships in the generational links, the greater the certainty of relatedness between grandparent and grandchild. We can therefore *hypothesize* that contacts are most frequent between maternal grandmothers and their grandchildren and that paternal grandfathers have least contact with their grandchildren. In between these two extremes are the contacts between maternal grandfathers and their grandchildren and between paternal grandmothers and their grandchildren.

Note that the previous hypothesis is also consistent with kinkeeping theory. Though kinkeeping theory and kin selection theory assume different mechanisms (the presence of female family members in the former and the gender composition of the generational link in the latter) they both arrive at the prediction that contacts are most frequent between maternal grandmothers and granddaughters.

According to kin selection theory, investments in family relationships are not only determined by the certainty of relatedness but also by the degree of relatedness, the assumption being that individuals are more inclined to invest in close relatives (for example, one's immediate family) than in distant relatives. Taking this assumption a step further, one could argue that individuals invest more in their children than in their grandchildren. In this study we shall test the *hypothesis* that grandparents have more frequent contact with blood-related grandchildren than with grandchildren acquired through step- or adoptive parenthood.

*Social emotional selectivity.* The next theory we shall address, social-emotional selectivity theory (Baltes & Carstensen, 1999; Carstensen, 1992), focuses on age differences in the type of social contact. When people are young and time seems to be endless, they tend to pursue long-term goals, such as acquiring new information and knowledge. As people grow older, short-term goals prevail, for example how someone feels at a particular moment in time. Within relationships, people tend to set greater store by emotional rather than instrumental ben-

efits as they grow older. Various studies underline that maintaining contact with one's grandchildren gives older adults a sense of emotional wellbeing. Pleasure, attention and affection are often mentioned as the benefits grandparents derive from interacting with their grandchildren (Johnson, 1988b). Contact with one's grandchildren gives people the opportunity to succeed in a role in which they may have been less successful as a parent (Neugarten & Weinstein, 1964). At the same time, it provides satisfaction that the family lives on through the grandchildren and that the grandchildren will achieve goals that both the grandparents and the parents failed to achieve. The theory of social-emotional selectivity argues that approaching death brings elderly people to focus more strongly on their most intimate relationships, including their grandchildren (Silverstein & Long, 1998). We formulate the *hypothesis* that older grandparents have more contact with their grandchildren than younger grandparents.

*The grandparental career.* Whereas our focus in the above was on the age of the grandparent, the grandparental career (Cherlin & Furstenberg, 1986) is based on the age of the grandchild. The first phase, referred to as the 'fat part of grandparenting', starts with the birth of the grandchild and ends when the grandchild reaches its teens. As is the case in professional careers, grandparents tend to invest most in their grandchildren during this phase. This includes looking after the grandchildren. During the second phase, adolescence, grandchildren start to distance themselves from their families. Their strong focus on peers (Harris, 1998) pushes family members, including grandparents, into the background. The second phase is ideally characterized by reciprocity: grandchildren help their grandparents with their shopping and odd jobs around the house and grandparents help their grandchildren with their homework and hobbies. The third phase starts when grandchildren become adults and start a family of their own. The great-grandparents now make way for the new grandparents. In this period, contact between grandparents and their adult grandchildren tends to be symbolic and is limited to the holiday periods, family celebrations and birthdays. In line with the grandparental career, we formulate the following *hypothesis*: as grandchildren grow older, the frequency of contact between grandparents and grandchildren declines.

#### *The opportunity structure*

Interaction between individuals largely depends on the opportunity structure, which either encourages contact or restricts contact. This is based on the idea that interactions between grandparents and grandchildren depend on the degree to which they are 'available' for interaction. We distinguish between physical and social availability.

*Physical availability.* Physical availability refers to the effort one needs to make to interact. An important factor in this respect is the geographical distance between the grandparent and grandchild. The same applies to the grandparent's state of health. We formulate the *hypothesis* that (a) the closer grandparents and grandchildren live to each other, and/or (b) the healthier the grandparent, the more frequent the contact between them will be. Another relevant factor is whether the grandparent lives independently. Quite apart from the fact that grandparents who live in a residential home for the elderly or a nursing home tend to be much less healthy than those who live independently (Van Solinge, 1995), there is also a so-called threshold effect. The limited accessibility of people in institutional residence due to a lack of privacy and the impersonal environment deters outsiders from visiting their grandparents regularly. We therefore formulate the *hypothesis* that grandparents in institutional living arrangements have less frequent contact with their grandchildren than grandparents who still live more or less independently.

We also believe that the time grandparents and grandchildren have available for contact plays a role in this respect. Grandparents who spend a great deal of time on other pursuits, be they a paid job or volunteer work, have less time to invest in the relationships with their grandchildren. Troll (1985) speaks of off-time grandparenthood: for individuals who are still busy with their own professional careers, the transition to grandparenthood is ill-timed because they have little time to be a grandparent. We shall test the *hypotheses* that (a) grandparents with a paid job have less frequent contact with their grandchildren than grandparents who do not have a paid job, and (b) grandparents who do volunteer work have less frequent contact with their grandchildren than grandparents who do not do volunteer work. Another factor that needs to be borne in mind is that grandparents may spend a lot of their time on other grandchildren. We *hypothesize* that grandparents with a large number of grandchildren have less frequent contact with individual grandchildren than those who have only a few grandchildren. We can not hypothesize at this point in what way the size of the family to which the grandchild belong relates to contact frequency. Whilst one could argue that the physical availability of grandparents is greater for grandchildren from small families than for grandchildren from big families, one could, conversely, postulate that grandparents have more frequent contact with grandchildren from big families because there are more occasions for them to visit their grandchildren (birthdays, etc). We have therefore refrained from formulating a *hypothesis* about the direction of the relationship between the frequency of contact between grandparent and grandchild and the size of the grandchild's family.

*Social availability.* The opportunity structure of the grandparent-grandchild relationship always includes a middle generation, who can either play a medi-

ating role or restrict the interactions between grandparents and grandchildren (Chan & Elder, 2000). Parents' bonds with their own parents tend to be passed on to their children (Barranti, 1985). Strong bonds between young adults and their grandparents are often a continuation of interactions in the past, when the grandchild's parents offered him or her the opportunity at an early age of fostering these ties (Matthews & Sprey, 1985). From this we can *hypothesize* that the stronger the bond between grandparents and their own children, the more frequent the contact will be with their grandchildren. This is true in particular for the children of daughters. Mothers of grandchildren are referred to as gatekeepers in the literature since they guard the road to the grandchild (Chan & Elder, 1996; Cherlin & Furstenberg, 1986). Given that older grandchildren are better able to independently maintain a relationship with their grandparents, thereby restricting the parents' mediating role (Brubaker, 1990), we can add the *hypothesis* that the influence of the quality of the relationship between a grandparent and his/her child on the frequency of contact between a grandparent and grandchild is weaker for older grandchildren than it is for younger grandchildren.

From the literature we know that parental divorce tends to disrupt the relationships with the children (Dykstra, 1998). The *hypothesis* we shall test in this regard is that divorced grandparents have less frequent contact with their grandchildren than grandparents who have never divorced. The reasoning behind this hypothesis is that divorce has negative consequences for the relationship between the oldest generation and the middle generation. Given the deteriorated relationship between the parents and grandparents, contact between grandparents and grandchildren tends to be less intensive. Divorced grandparents are found to have less contact with grandchildren than grandparents who are not divorced (King, 2003; Uhlenberg & Hammil, 1998). Divorce among members of the younger generation, however, does not necessarily disrupt the relationships with the older family generation, on the contrary even (Dykstra, 1998). The oldest generation may act as a source of stability and support for both the grandchildren and the parents (Johnson, 1988). We formulate the *hypothesis* that grandparents have more frequent contact with grandchildren whose parents have divorced than with grandchildren whose parents stayed together. In the previous hypothesis we have not taken into account by whom the children are raised following divorce. As a rule, children spend more time with their mothers than with their fathers following divorce. This means that the paternal grandparents are likely to see their grandchildren less. From this, we can formulate the *hypothesis* that the positive effect of a divorce by the middle generation on the frequency of contact between grandparents and grandchildren is less strong if it is the father rather than the mother of the grandchild who got divorced.

Table 1: *Overview of hypotheses regarding differences in the frequency of contact between grandparents and grandchildren*

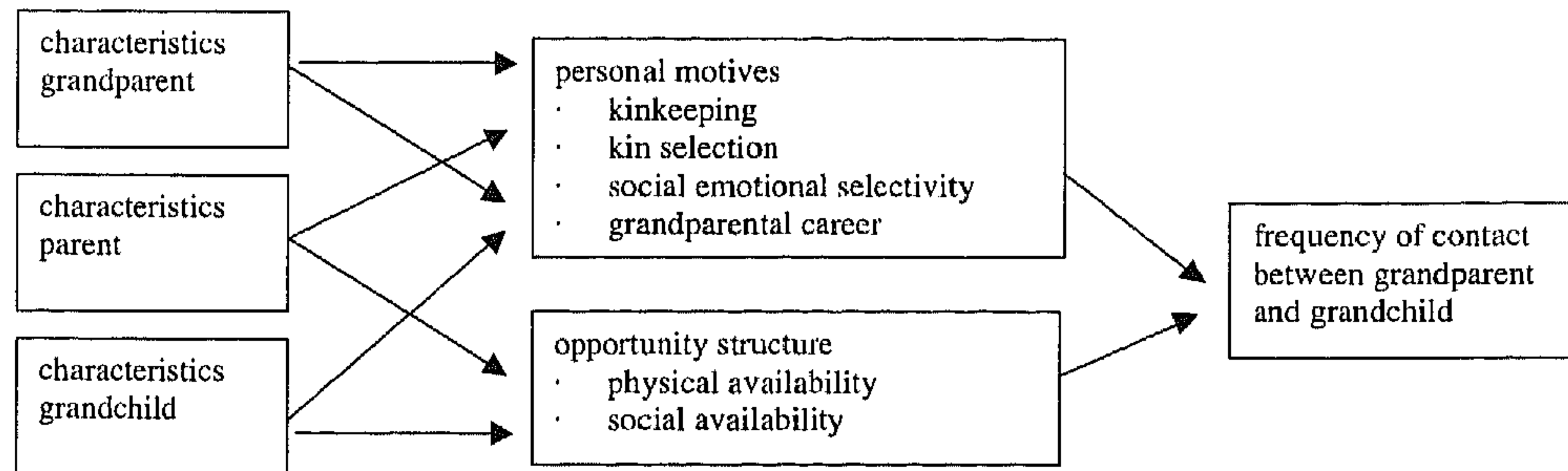
Theory	Variable	Expected association
<i>Personal motives</i>		
Kin selection		
Degree of relatedness	Adopted or step-grandchild (1=yes)	-
Paternity uncertainty	Number mother-child ties (0-2)	+
Kinkeeping		
	Gender grandparent (1=female)	+
	Gender middle generation (1=female)	+
	Gender grandchild (1=female)	+
Social emotional selectivity	Age grandparent (years)	+
Grandparental career	Age grandchild (years)	-
<i>Opportunity structure</i>		
Physical availability		
	Travelling time (minutes)	-
	Health grandparent (4-20)	+
	Institutional residence grandparent (1=yes)	-
	Paid job grandparent (1=yes)	-
	Volunteer work grandparent (1=yes)	-
	Number grandchildren (1-49)	-
	Family size middle generation (1-8)	?
Social availability		
	Exchanged emotional support middle generation-grandparent (2-8)	+
		(declining association with age grandchild)
	Divorce grandparent (1=yes)	-
	Divorce middle generation (1=yes)	+
		(weaker association for sons)

## Data and methods

In order to answer our research questions, we used data provided by the 'Living arrangements and social networks of older adults' survey (NESTOR-LSN), for which face-to-face interviews were held in 1992 among more than 4400 older adults born between 1903 and 1937. In this stratified sample, elderly respondents, in particular elderly men, were overrepresented. The samples were taken from the population registers of eleven municipalities in the Netherlands: Amsterdam and two rural municipalities in its immediate vicinity, one city and two rural municipalities in the south of the country and one city and four rural municipalities in the north-east. The sample included both older adults who lived independently and older adults in homes for the elderly or in nursing homes. For details about the data gathering process, see Van Broese Groenou, Van Tilburg, De Leeuw & Liefbroer, 1995.



Figure 1: *Theoretical model explaining differences in the frequency of grandparent-grandchild contact*



During the interview a random subsample of grandparents (N = 976) were asked to provide information about *each* of their grandchildren. Just over half the grandparents selected were women (54.5%); the average age of the grandparents was 73.5 years; 76% of the grandfathers were married, over 3% were divorced and more than 21% widowed; 48% of the grandmothers were married, 5% were divorced, 47% were widowed, and one grandmother had never been married. Six percent of the grandparents lived in an institutional living environment. On average, the men became grandparents 2.5 years later than the women (at the ages of 55.3 and 52.9 years respectively). The respondents had an average of just over six grandchildren, and the number of grandchildren ranged from one to 49. Whereas respondents aged 85 years and over had an average of nine grandchildren, those aged 55 to 65 had an average of four grandchildren. The average age of the grandchildren was 16 years. The youngest grandchild was under one year old and the oldest was 53. About one third of the grandchildren were over 20.

A number of selections were made for the purpose of analysis. Information about grandchildren who lived with their grandparents was not included. Neither were data about the grandchildren whose parents had died taken into account (i.e. the analyses were limited to families in which the grandparent-middle generation-grandchild link was still intact). The analyses were based on 945 grandparents who together had 2529 children and 5752 grandchildren.

#### *Measuring instruments*

*Frequency of contact.* The respondents were asked how often they had contact with each of their grandchildren. The interviewers emphasized that this included personal contact as well as contact by phone or in writing. The answer categories ranged from 'never' (score 0), 'once a year or less' (score 1), 'a few times a year' (score 2), 'once a month' (score 3), 'once every two weeks' (score 4), 'once a week' (score 5), and 'a few times a week' (score 6) to 'daily' (score 7).

*Blood relationship of grandchild.* Grandparents were asked to indicate for each

child and grandchild whether they were biological, stepchildren or adoptive children. Non-blood-related grandchildren (score = 1) were either step- or adoptive children themselves or had a parent who was a step- or adoptive child of the respondent. Blood-related grandchildren scored zero on this variable.

*Geographical distance.* Precise data were not available about the geographical distance between the grandparent and each of his/her grandchildren. We did, however, have information about the traveling time between the grandparent and the middle generation, which could be seen as an indication of the traveling time between grandparent and grandchild. As information about the geographical distance was lacking in particular for the older grandchildren, we added an interaction variable with the age of the grandchild to the analyses. Geographical distance was measured as the number of minutes it takes to travel to the other by the usual means of transport. The logarithm of the traveling time was used in the analyses to counteract the possible disruptive influence of extreme values (33 children – parents of 76 grandchildren – living at a traveling distance of more than 24 hours from the grandparent).

*Health of grandparent.* Functional capacity was used as an indicator of health. This indicator was measured with the aid of four questions about the degree to which the respondent was able to perform activities of daily living (ADL) such as walking up and down stairs, walking for five minutes without stopping, sitting down and getting up from a chair and getting dressed and undressed. The ADL score ranged from four (serious functional incapacity) to 20 (no functional incapacity).

*Institutional residence.* In the survey respondents were asked questions about their household situation. A distinction was made between private and institutional households. Most of the grandparents in the sample who lived in an institutional residence (score = 1) lived in a residential home for the elderly. Only a few lived in a nursing home.

*Paid employment grandparent.* Whether or not a grandparent had a paid job (score = 1 and score = 0 respectively) was determined on the basis of the number of hours a week that the respondent was in paid employment. This question was also asked to respondents aged over 65.

*Volunteer work grandparent.* During the interview the respondents were given a list of organizations for which volunteer work could be done. Respondents who did volunteer work for at least one organization were assigned a score of 1. Those who were not involved in volunteer work were assigned a score of zero.

*Quality of middle generation-grandparent relationship.* The original NESTOR-LSN survey did not contain any specific questions about the quality of the relationship between the respondent and his or her children. Information is available about the exchange of emotional support between the respondent and the twelve most important people in his or her network. The variable exchanged emotional support ranged from 2 'no emotional support received or

given' to 8 'emotional support often received or given'. The score is the sum of two items about which the respondent was asked to indicate the frequency with which he or she had given or received emotional support in the previous year (i.e. exchange of personal experiences and feelings) to or from the network member mentioned (answer categories: 1 'never', 2 'seldom', 3 'at times' and 4 'often'). It was assumed that children who were not reckoned to belong to the twelve most important people in the respondent's network had not exchanged emotional support with the respondent (score 2). We assume that grandparents and their children (the middle generation) who exchange emotional support more frequently are more inclined to have a close relationship.

*Ever-divorced grandparent.* Respondents were asked to indicate for each marriage whether it was still intact. In the event of dissolution, they were asked to give the reason (divorce, death of partner). Based on this information, it could be determined whether the grandparent had ever been divorced (score = 1) or had never been divorced (score = 0).

*Ever-divorced middle generation.* Respondents were also asked about the marital history of each of their children. Based on this information, it could be determined whether they had ever been divorced (score = 1) or had never been divorced (score = 0).

*Number of grandchildren.* The sum of the number of living grandchildren was calculated for each grandparent.

*Family size grandchild.* The number of living brothers and sisters was determined for each grandchild. This number plus one is the family size.

*Control variables.* The grandparent's partner status and his or her level of completed education served as control variables. Grandparents who shared a household with a partner were assigned a score of zero for partner status. Grandparents who had lived alone since divorce or widowhood were assigned a score of 1 on this variable. The highest completed level of education was measured with the aid of the number of years of education pursued.

## **Analyses**

For the descriptive analyses we used weighted data in view of the overrepresentation of elderly (male) respondents in the NESTOR-LSN survey. For these analyses we also used data aggregated over the various grandchildren for each grandparent.

In view of the hierarchical structure of our data, multilevel regression models were used to test the hypotheses (Goldstein, 1995). The data about the grandchildren constitute the first and lowest level, those about the middle generation (child of the grandparent and parent of the grandchild) constitute the second level and data about the grandparents constitute the third and highest level. Multilevel models enable us to seek explanations for differences in contact

frequency between grandparents and grandchildren in the different generations within families.

We made use of *forward modeling*. We started with the 'empty' model (only the intercept and the constant variances per level) and subsequently added sets of variables to the model using the distinguished theories as the guideline. Accordingly, the average effect on the independent variable (*fixed effect*) is estimated for each explanatory variable in addition to the intercept. The coefficients of the *fixed effects* and their standard errors can be read in the same way as is customary for linear regression analyses. The reduction in deviance provides a test for whether a model fits the data better than a previous model. The measure for the deviance between the estimated model and the actual data is the  $-2 \cdot \log\text{likelihood}$ . The reduction in deviance has a  $\chi^2$  distribution, with the number of added variables as the degrees of freedom. For the model sequence we opted for a theory-driven incorporation of the variables. The sequence was: (1) variables relating to the personal motives to invest in family relationships (kin selection and kinkeeping), (2) variables relating to the personal motives to invest in the relationship over time (social emotional selectivity and the grandparental career), (3) variables relating to the physical availability of the grandparent and grandchild, and (4) variables relating to the social availability of the grandparent and grandchild. Three interaction variables were added to the last model. The second model onwards controlled for differences in education and partner status between grandparents. In order to facilitate interpretation of the relevant regression coefficients, the variables age, health, education, number of grandchildren, exchanged emotional support middle generation-grandparent, and family size of the grandchild were centered around the mean.

## Results

### *Descriptive analyses*

Table 2 gives an overview of the degree to which grandparents have contact with their grandchildren, broken down by the grandparent's sex and age category. We found that 1.6% of the grandparents said they had no contact whatsoever with their grandchildren. As about one in ten grandparents did not have contact with all of their grandchildren, almost 90 percent of the grandparents did have contact with all their grandchildren. Three out of five grandparents said they were in contact with one or more of their grandchildren every week, and one in eight had daily contact with one or more of their grandchildren.

We hardly found any differences between the degree of contact with grandchildren among grandfathers and grandmothers. There was only a significant difference with respect to contact with all the grandchildren. Grandfathers

Table 2: *Characteristics of the contacts between grandparents and grandchildren by gender and age of the grandparent (percentages)*

	N	No contact with any grandchildren	Contact with some but not all grandchildren	At least weekly contact with $\geq 1$ grandchild	Daily contact with $\geq 1$ grandchild
All grandparents	930	1.6	11.0	61.2	12.3
Gender					
Male	349	1.1	8.3	63.0	14.3
Female	581	1.9	13.1	60.7	11.0
$\chi^2(1)$		0.77	4.96*	0.52	2.22
Age category					
55 – 64	326	1.8	3.7	73.8	12.3
65 – 74	345	1.4	6.4	68.1	12.4
75 – 84	198	1.5	15.7	56.6	13.6
85 – 89	35	0.0	25.0	40.0	8.3
$\chi^2(3)$		- <sup>a</sup>	38.66**	28.10**	0.82

<sup>a</sup>  $\chi^2$ -test not applicable given that more than 25% of the cells in the crosstabulation have an expected frequency below 5.

\*  $p < .05$ , \*\*  $p < .001$

Source: Living Arrangements and Social Networks of Dutch Older Adults (NESTOR-LSN) 1992.

tended to have more contact with all their grandchildren than grandmothers did. The degree of contact with grandchildren was found to vary with the age of the grandparent. Not only did younger grandparents tend to have more contact with all their grandchildren than older grandparents, but a larger percentage of younger grandparents (almost 75%) were also found to have contact with one or more of their grandchildren at least weekly than older grandparents (40%).

#### *Explanatory analyses*

The results of the 'empty' model of the multilevel analysis show that grandparents and grandchildren are in contact several times a month on average (a score of 3.763 on a scale from 0, never, to 7, daily). Half the total variance (47.9%) is found in the middle generation. Characteristics of the middle generation play an important role in determining the frequency of contact between grandparents and grandchildren. Another substantial part of the total variance relates to the grandparents (42.1%). No more than 10% of the total variance is related to the grandchild. Differences in the frequency of contact with grandparents are therefore smallest among grandchildren of the same family.

Table 3: Results multivariate multilevel-regression analysis of the frequency of grandparent-grandchild contact incorporating characteristics of the grandparent, grandchild and middle generation (unstandardized regression coefficients and absolute t-values); 5752 grandchildren, 2529 children, 945 grandparents

	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	3.791*** (46.8)	3.681*** (49.1)	5.800*** (53.2)	5.895*** (56.1)	5.847*** (55.7)
Grandparent characteristics					
Gender (1=female)	0.210* (2.1)	-0.062 (0.7)	0.085 (1.1)	-0.009 (0.1)	0.004 (0.1)
Age (M=73.5)		-0.052*** (10.4)	-0.030*** (6.0)	-0.029*** (5.8)	-0.030*** (6.0)
Ever divorced				-0.843*** (6.2)	-0.836*** (6.2)
Health (M=18)			0.040** (3.1)	0.037** (2.8)	0.033** (2.5)
Institutional residence			-0.533*** (3.3)	-0.582*** (3.8)	-0.573*** (3.8)
Paid job			-0.342* (2.2)	-0.295* (2.0)	-0.321*** (2.2)
Volunteer work			0.012 (0.1)	0.019 (0.2)	0.018 (0.2)
Number of grandchildren (M=6)			-0.042*** (6.0)	-0.036*** (6.0)	-0.035*** (5.8)
Partner (1=no partner)	-0.826*** (8.2)	-0.285** (2.9)	-0.165* (2.0)	-0.097 (1.2)	-0.092* (1.1)
Educational level (M=8 years)	-0.031 (1.9)	-0.059*** (3.9)	-0.017 (1.3)	-0.033** (2.8)	-0.033** (2.8)
Grandchild characteristics					
Gender (1=female)	0.024 (1.2)	0.023 (1.2)	0.024 (1.3)	0.024 (1.3)	0.025 (1.3)
Same-sex as grandparent	0.050** (2.5)	0.045* (2.3)	0.044* (2.3)	0.044* (2.3)	0.041* (2.2)
No blood tie	-0.818*** (7.0)	-0.808*** (7.1)	-0.684*** (6.4)	-0.556*** (5.3)	-0.565*** (5.4)
Age (M= 16)		-0.028*** (9.3)	-0.028*** (14.0)	-0.027*** (13.5)	-0.057*** (8.1)
Middle generation characteristics					
Gender (1 = female)	0.289*** (4.9)	0.319*** (5.6)	0.306*** (6.1)	0.234*** (4.8)	0.186*** (3.6)
Ever divorced				-0.618*** (7.4)	-0.918*** (7.5)
Exchanged emotional support				0.143***	0.141***

	Model 2	Model 3	Model 4	Model 5	Model 6
middle generation-grandparent (M=5.5)				(11.0)	(10.8)
(log) Travelling time from grandparent			-1.335*** (26.2)	-1.204*** (24.1)	-1.172*** (23.9)
Family size (M=2)			-0.061* (2.1)	-0.077** (2.8)	-0.076** (2.7)
Interactions					
Middle generation ever divorced* gender middle generation					0.556* (3.4)
Emotional support grandparent-middle generation* age grandchild					-0.002* (2.0)
(log) Travelling grandparent-middle generation* age grandchild					0.026*** (6.5)
Variance					
Level grandparents	1.166*** (12.8)	0.854*** (11.5)	0.554*** (10.5)	0.498*** (10.4)	0.495*** (10.3)
Level middle generation	1.521*** (25.8)	1.457*** (26.0)	1.136*** (25.2)	1.037*** (24.7)	1.013*** (24.7)
Level grandchildren	0.320*** (40.0)	0.317*** (39.5)	0.317*** (39.6)	0.316*** (39.6)	0.315*** (39.4)
Explained variance (proportions)	0.07	0.19	0.38	0.43	0.44
Level grandparents	0.14	0.37	0.59	0.63	0.64
Level middle generation	0.02	0.06	0.27	0.33	0.35
Level grandchildren	0.01	0.02	0.02	0.02	0.02
Model fit					
-2*Loglikelihood	16758.77	16475.09	15817.01	15600.74	15534.98

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Source: Living Arrangements and Social Networks of Dutch Older Adults (NESTOR-LSN) 1992.

Table 3 gives the results of the multilevel regression analysis including explanatory variables. The kinkeeping and kin selection variables were added in Model 2, with the level of education and partner status of the grandparent as control variables. Given the lower deviance, this model fits the data better than the empty model:  $\chi^2_{(7)} = 148.74$ . The random part of the table contains both the constant variances per level and the proportions explained variance with respect to the empty model (total and per level). The explained variance is the proportion of the reduction in variance (total and per level) relative to the initial existing variance in the empty model. As shown in the bottom part of the table,

the kin selection and kinkeeping variables primarily explain differences at the grandparent level.

Kinkeeping refers to the greater involvement of women in interactions within the family. In line with this, we see that grandmothers tend to have more contact with their grandchildren than grandfathers. The result that grandparents have more frequent contact with the children of their daughters than the children of their sons is also in line with the kinkeeping concept. There is little support, however, for the concept of kinkeeping within the youngest generation: we did not find any differences in the frequency of contact with grandparents between granddaughters and grandsons.

Kin selection refers to the degree of certainty of relatedness. As expected, grandparents were found to have less contact with step- and adoptive grandchildren than with blood-related grandchildren. Model 2 presents no more than a partial test of the effect of paternity uncertainty. The number of mother-daughter links could not be included in the model in view of the overlap with separate gender variables. In this model we therefore only tested whether contact with the children of daughters was more frequent than contact with the children of sons. As reported in the foregoing, this was indeed found to be the case. As a control, we included a dummy variable for same-sex grandparent-grandchild relationships. Contact between grandparents and grandchildren of the same sex appeared to be more frequent than contact between grandparents and grandchildren of different sexes. The results of the bivariate analyses provided little support, however, for the hypothesis that grandmothers and the children of their daughters have most frequent contact and that grandfathers and the children of their sons have least contact (details of these analyses are available from the authors on request). The sex of the middle generation was found to be a determining factor. Both grandmothers and grandfathers were found to have more frequent contact with the children of their daughters than with the children of their sons. Another factor that played a role was whether or not the grandparent and grandchild were of the same sex. Grandfathers tend to have more frequent contact with grandsons than with granddaughters and grandmothers have more frequent contact with granddaughters than with grandsons.

Social-emotional selectivity assumes that contact frequency increases as grandparents grow older. The results of Model 3 show, however, that the opposite was found to be the case: older grandparents have relatively less frequent contact with their grandchildren than young grandparents. The notion of the grandparental career holds that contacts with grandchildren are most intensive when the grandchildren are still young. The negative coefficient for the age of the grandchild in Model 3 is in line with this. The effect of the sex of the grandparent is no longer significant in Model 3. If, as is the case in Model 3, we take into account that grandfathers tend to be older on average than grandmothers, both appear to have more or less the same frequency of contact with their grandchildren. Based on the reduction in deviance between Model 2 and Model



3, we can conclude that the latter model better fits the data ( $\chi^2_{(2)} = 283.68$ ). The explained variance has increased in particular at the level of the grandparents. Model 4 introduced variables relating to the physical availability of grandparent and grandchild. In terms of the characteristics of the grandparents, we found that, as expected, the frequency of contact with grandchildren was positively related to health and negatively related to living in an institutional household, having a paid job and the number of grandchildren. Contrary to expectations, being involved in volunteer work has no effect on the frequency of contact with grandchildren. Traveling time was found to have the expected effect: the longer it takes to travel between grandparents and grandchildren, the less frequent the contact was found to be. And lastly, a difference was found based on the size of the grandchild's family: the more brothers and sisters a grandchild has, the less frequent the contact is with his or her grandparent. This result is not in line with the idea that big families offer more occasions for grandparents to visit their grandchildren (birthdays, etc). In fact, the opposite was found: grandchildren with a relatively large number of brothers and sisters tend to have relatively little contact with their grandparents. Adding variables relating to physical availability provides a better explanation for differences among grandparents and for differences relating to the middle generation. As shown by the decline in deviance, Model 4 better fits the data than Model 3 ( $\chi^2_{(7)} = 658.08$ ).

Indicators of social availability were added to Model 5. As expected, the quality of the relationship between the parents and grandparents, measured with the aid of the degree of emotional support exchanged, was found to be an important predictor of the frequency of contact between grandparents and grandchildren. Grandparents who had a close relationship with their sons or daughters were found to have significantly more frequent contact with the grandchildren concerned. Also in line with expectations, grandparents who had experienced divorce had less contact with their grandchildren than those who had not divorced. Contrary to our expectations, we found that divorce experienced by the middle generation also resulted in relatively less frequent grandparent-grandchild contact. We had predicted the opposite, namely that divorce by members of the middle generation would lead to stronger intergenerational family ties. Note that we found negative consequences of divorce even though we had already taken account of the quality of the relationship between grandparents and their adult children. Model 5 offers a better fit of the data ( $\chi^2_{(3)} = 216.27$ ) than Model 4. Inclusion of the social availability characteristics results in a higher explained variance at the level of the grandparents and of the middle generation.

In Model 6, we added three interaction variables to the model. The positive value of the coefficient of the interaction variable 'middle generation ever divorced\*sex middle generation' indicates that the negative consequences of a middle-generation divorce for the frequency of contact between grandparents and grandchildren are less strong for daughters than for sons. The coefficient of the interaction variable 'emotional support grandparent middle generation\*age

grandchild' is negative: as expected, the influence of the quality of the parent-grandparent relationships on the interactions between grandparents and grandchildren is less strong for older grandchildren than it is for younger grandchildren. The influence of traveling time was also found to differ between older and younger grandchildren. The negative correlation between traveling distance and the frequency of contact was less strong among older grandchildren than among younger grandchildren. As described in the foregoing, traveling distance relates to the distance between the grandparent and the parents of the grandchild. It is not surprising that the constraints imposed by traveling distance are not as strong for older grandchildren (most of whom have left the parental home) as they are for younger grandchildren. Addition of the interaction variables contributes significantly to the explanation of the frequency of contact between grandparents and grandchildren ( $\chi^2_{(3)} = 65.76$ ). Addition of the interaction variables only slightly decreases the unexplained variance at the level of the grandparent and the grandchild. The decrease is most pronounced at the level of the middle generation.

## Conclusion

The overall picture presented by our study is that most grandparents in the Netherlands have quite frequent contact with their grandchildren: more than half the grandparents have contact with one or more of their grandchildren every week. About one in eight grandparents even have daily contact with the grandchildren.

Is the frequency of contact between grandparents and grandchildren distributed equally across all grandchildren? The answer to this question is 'No'. Not only does the frequency of contact vary among grandparents, but also among the families of their children and among individual grandchildren. The differences are biggest among grandchildren of different parents. This brings us to the most important conclusion of this study, namely that the circumstances of the middle generation largely determine the frequency of contact between grandparents and grandchildren. Differences in contact frequency among grandchildren from the same family are relatively small.

At the level of the middle generation, characteristics of the opportunity structure tend to determine the frequency of contact between grandparents and grandchildren. In addition to travelling time and the number of grandchildren, the quality of the relationship with the grandparent was found to play a role. Grandparents and grandchildren tend to have more frequent contact if the quality of the parent-grandparent relationship is good. Whether or not the middle generation had ever experienced divorce was also found to be an important determinant, albeit that the implications were contrary to what we had expected on the basis of previous research. Grandparents were found to have less frequent contact with grandchildren if the middle generation had ever been divorced, in

particular in the case of sons. We had assumed that divorce among adult children would intensify ties between generations, and that grandparents would step in to support their children. It is not clear why the divorce of parents leads to less contact with grandparents. A decrease in contact in the case of sons is hardly surprising, given that children tend to spend more time with their mothers than with their fathers following divorce. Other factors that may play a role are remarriage by the divorcees or the arrival of stepgrandchildren.

Personal motives also play a role at the level of the middle generation. Based on both the theory of kinkeeping and the theory of kin selection, we assumed that contact would be more intensive in the case of daughters than in the case of sons. This assumption was empirically supported and provides further evidence for matrilinearity in family relationships (Chan & Elder, 2000; Verweij & Kalmijn, 2004).

Differences in contact frequency may be explained not only by characteristics of the middle generation, but also by characteristics of the grandparents. Here, too, characteristics of the opportunity structure appear to have more explanatory power than personal motives. Having said that, personal motives *are* of influence. The age of the grandparent, for example, was found to be an important determinant, also when bearing in mind factors related to age, such as health, institutionalization, partner status, the number of grandchildren and the age of the grandchild. On average, older grandparents tend to have less contact with their grandchildren than younger grandparents. Note that we had expected the opposite on the basis of the theory of social-emotional selectivity, namely a positive relationship between the age of the grandparent and the frequency of contact. The theory assumes that elderly people focus more strongly on intimate relationships that are most valuable to them emotionally, including contacts with their grandchildren. But the results of our study suggest that older grandparents may face barriers that make it more difficult for them to have contact with their grandchildren. A possible explanation may be that older grandparents and their grandchildren have more difficulty understanding each other's worlds than younger grandparents and their grandchildren.

We shall linger longer on one of the characteristics of the opportunity structure, namely divorce. If the grandparent is divorced, this has negative consequences for the frequency of contact with grandchildren, even when taking into account the quality of the relationship between the grandparent and his or her child. Various interpretations are possible. In the event of divorce, the grandchild will have two rather than one address to visit or to phone. Another possibility is that the grandparent has remarried and that other grandchildren have come into the grandparent's life through the new partner. Further research will have to shed more light on this issue.

The characteristics of the grandchild included in the model relate primarily to personal motives. The greater the degree of relatedness, the more frequent the contacts with the grandparents tend to be. In other words, contact is more

frequent with biological grandchildren than it is with step- or adoptive grandchildren. Another relevant factor is the age of the grandchild. The finding that contact with younger grandchildren is more frequent than that with older grandchildren may be related to the fact that grandparents contribute to the informal care of young children. Interestingly, we did not find support for the kinkeeping role of girls: contact with grandsons was just as frequent as contact with granddaughters. This finding may be interpreted in two ways. The first is that the kinkeeping role may be reserved for adult women. Another interpretation may be that kinkeeping relates primarily to descendant family members rather than to family members in the ascendant line. We also found that gender as such did not offer a sufficient explanation for the frequency of contact with grandparents. We did find, however, that sex similarity plays a role: grandparents have more frequent contact with grandchildren of the same sex than with grandchildren of the other sex. This is in line with research by Dubas (2001), who found that granddaughters reported the closest ties with grandmothers whereas grandsons had closer ties with grandfathers. Her interpretation is that normative limitations to cross-gender interactions play an important role in the grandparent-grandchild relationship, particularly during young adulthood.

All data used in this study were provided by the grandparents, including the relatively sparse information about the grandchildren. Further research will have to provide more insight into the interactions between grandparents and grandchildren from the grandchild's perspective. Which motives could a grandchild have to invest in the relationship with a grandparent and to which extent do the grandchild's living circumstances influence the relationship with its grandparent? Ideally, data should also be gathered about both of the grandchild's parents, all of its grandparents and the relationship between the grandchild and its parents. Several questions that could not be answered in this study relate to the development of the relationship between grandparents and grandchildren. Silverstein and Long's (1998) longitudinal study shows that the frequency of contact between an adult grandchild and its grandparents declines strongly over a period of 23 years. Additional longitudinal research will have to show how the relationship develops from the start. To what extent can we distinguish different phases in the relationship between a grandparent and his or her grandchild? To what extent do the grandchild's parents and the circumstances of the parents influence the relationship during the course of time?

The results of this study offer a number of new perspectives on future trends. The finding that older grandparents have less frequent contact with their grandchildren than younger grandparents is interesting in view of the postponement of parenthood in the Netherlands. The average age of Dutch women at the birth of their first child now stands at 30 years (Beets, Dourleijn, Liefbroer, & Henkens, 2000). As a result, the age at which people become grandparents for the first time is also increasing. Should the postponement of parenthood persist, future grandparents may well have less contact with their grandchildren than today's

grandparents. At the same time, there is a trend that suggests that grandparents will have *more* opportunity to foster close ties with their grandchildren in the future in view of the declining family size, as a result of which grandparents will, on average, have fewer grandchildren (Post et al., 1997).

Another possible trend is that contact between grandparents and grandchildren will become less widespread given the rise in divorce. Contrary to what is the case in France, Austria and the United States, grandparents in the Netherlands have no legal right to visit their grandchildren (Arps, 1997). If the number of divorces among parents with children rises, contact between grandparents and grandchildren in the Netherlands will be restricted. The number of ever-divorced among today's elderly is still relatively small, but this is set to change in the future. At the same time, we see the rise of stepgrandparenthood as people increasingly have children in their second and third marriages. This study has shown that stepgrandparents tend to have less contact with their grandchildren than biological parents. The growing number of stepgrandparents and stepgrandchildren in families may well influence the interactions between grandparents and their biological grandchildren. Further research will have to study in more detail in what way the growing complexity of family structures influences the relationships between grandparents and grandchildren.

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