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Changes in adult children's participation in parent care

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ABSTRACT
Care-giving research has focused on primary care-givers and relied on cross-sectional data. This approach neglects the dynamic and systemic character of care-giver networks. Our analyses address changes in care-givers and care networks over a two-year period using pooled data from the US Health and Retirement Study, 1992–2000. Based on a matrix of specific adult-child care-givers across two consecutive time-points, we assess changes in any adult-child care-giver and examine the predictors of change. A change in care-giver occurred in about two-fifths of care-giving networks. Ability to provide care based on geographical proximity, availability of alternative care-givers, and gender play primary roles in the stability of care networks. Results underline the need to shift care-giving research toward a dynamic and systemic perspective.

KEY WORDS – care-giving, intergenerational, change.

Introduction

Past studies have shown that siblings often share parent care (Checkovich and Stern 2002; Finch and Mason 1993; Hequembourg and Brallier 2005; Ingersoll-Dayton *et al.* 2003*a*, 2003*b*; Matthews 1992, 1995; Wolf, Freedman and Soldo 1997) but provide little information on the dynamics and sequencing of such sharing. Similarly, earlier research offers insights into the selection of adult children as parental care-givers (Grundy and Henretta 2006; Pillemer and Suitor 2006) but lacks information on whether specific adult children stop care or enter the care network later than other children. In view of demographic changes including population ageing, lower fertility, and relatively high divorce rates (National Alliance for Caregiving 1998), it is essential to further explore the dynamics of parent care. If sharing of parent care enables overburdened care-givers to relinquish care to a sibling or allows adult children with other obligations to postpone participation in

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parent care, then smaller sibling networks may reduce the viability of parent care networks and increase the burden of care for individual care-givers. To address these issues, we present analyses of changes in parent care based on data from the US Health and Retirement Study (HRS). Our analyses assess changes in parent care both at the child and family system level.

Theoretical framework and literature review

Our theoretical framework relies on altruism, rational choice, gender norms, as well as the lifecourse and family systems perspectives. Although several other theories have been used to explain children's participation in care (Henretta *et al.* 1997; Pillemer and Suitor 2006; Silverstein *et al.* 2002; Stern 1995; White-Means and Hong 2001), we lack data to test these theories. Altruism mainly informs analyses pertaining to the impact of parent characteristics on care-giver change, whereas exchange theory and gender norms have most relevance for addressing the effects of adult-child characteristics. Lifecourse and family systems theories speak primarily to the composition of the adult-child network (Coward and Dwyer 1990; Lawrence *et al.* 2002; Matthews 1987, 1992; Wolf, Freedman and Soldo 1997).

Altruism

The main tenet of altruism theory is that children are motivated by love for their parents so that their provision of care is driven foremost by parents' needs. Such needs derive first from parents' health condition. Studies show that parents' poor health (Brandt, Haberkern and Szydlik 2009; Couch, Daly and Wolf 1999; Dautzenberg, Diedriks and Philipsen 2000; Igel *et al.* 2009) or limitations in activities of daily living (ADLs) or instrumental activities of daily living (IADLs) (Barrett and Lynch 1999; Checkovich and Stern 2002; Haberkern and Szydlik 2010; Pezzin, Pollak and Schone 2008; Sloan, Picone and Hoerger 1997; White-Means and Rubin 2008; Wolf, Freedman and Soldo 1997) increase children's participation in care. Because age can function as an indicator of disability, older parents have also been shown to receive more care from adult children (Byrne *et al.* 2002; Checkovich and Stern 2002; Peek, Coward and Peek 2000; Pezzin and Schone 1997; Pezzin, Pollak and Schone 2008).

Parental need for care from their children is also tied to the availability of alternative care-givers. Spouses are typically primary care-givers so that currently not married individuals are more likely to rely on adult children for their care needs (Barrett and Lynch 1999; Checkovich and Stern 2002; Haberkern and Szydlik 2010; Peek, Coward and Peek 2000; Pezzin, Pollak

and Schone 2008; Sarkisian and Gerstel 2004; Sloan, Picone and Hoerger 1997). In addition, parents who can afford formal help may rely on such supports rather than on help by their children. Indeed, some earlier research shows greater participation of adult children among parents with lower incomes (Couch, Daly and Wolf 1999) or lower education (Checkovich and Stern 2002; Peek, Coward and Peek 2000; Pezzin, Pollak and Schone 2008). It is important to note that altruism applies to care by any child and thus does not speak directly to the selection of specific children as care-givers.

In contrast, an extension of altruism theory postulates that children are motivated by a desire to instil love and willingness to help in their own children, thus securing care for themselves in old age through a 'do as I do' approach (Silverstein *et al.* 2002; Stark 1995; White-Means and Hong 2001). Based on this postulate, adult children should be more likely to provide care if they are themselves parents. However, as will be discussed below, current parenting obligations also constitute competing demands on parents' time and may thus deter them from providing care. It is thus not surprising that research yields inconsistent results regarding the effects of parenthood on care-giving (Couch, Daly and Wolf 1999; Gallagher and Gerstel 2001; Henz 2006; Igel *et al.* 2009; Pezzin and Schone 1999; Wolf, Freedman and Soldo 1997).

Rational choice/exchange

The main assumption underlying rational choice and exchange theories is that individuals strive to maximise profit (Sabatelli and Shehan 1993; Silverstein *et al.* 2002). Thus, the distribution of care among adult children will be driven by the relative benefits and costs of care for each child. Rational choice theory puts more emphasis on objective criteria for profit assessments, whereas exchange theory acknowledges the importance of perceived benefits and costs. Because we lack data that explicitly identify benefits of care, whether emotional or economic, we focus on factors associated with care-giving costs. Such costs arise from each child's access to the parent (especially in regard to proximity) and competing obligations that increase the utility or value of individuals' available time and thus implicitly the costs of spending time on care.

Because care requires face-to-face contact, proximity to the parent reduces costs arising from commuting to the parent's residence. Indeed, studies show consistently that children living close to parents are more likely to provide care (Brandt, Haberkern and Szydlik 2009; Checkovich and Stern 2002; Dautzenberg, Diedriks and Philipsen 2000; Engers and Stern 2002; Haberkern and Szydlik 2010; Matthews 2002; Stern 1996).

Competing demands on children's time constitute another barrier to care provision because time spent on care could be devoted to other, perhaps more important or enjoyable, endeavours. Such demands derive from other family obligations (marriage, children) as well as from employment. Most studies indicate that married children are less likely to provide care (Dautzenberg, Diedriks and Philipsen 2000; Engers and Stern 2002; Henz 2006; Matthews 2002; Pezzin, Pollak and Schone 2008; Sarkisian and Gerstel 2004; Sloan, Picone and Hoerger 1997), although some find no effect on care provision (Henretta *et al.* 1997; Wolf, Freedman and Soldo 1997) or on mothers' expectation of care from the child (Pillemer and Suitor 2006). Furthermore, the effect of children's marital status may vary by gender as well as race and ethnicity. For example, White-Means and Rubin (2008) found that White but not Black married children were less likely to give ADL help to parents, and Haberkern and Brandt (2010) report that partnered sons but not daughters provide less care.

Children can either constrain their mothers' time for care (Grundy and Henretta 2006; Matthews 2002; Pezzin and Schone 1997; Wolf, Freedman and Soldo 1997) or serve as a connection to family (Gallagher and Gerstel 2001). For example, some studies indicate that number of children reduces their mothers' propensity to provide care (Henz 2006; Igel *et al.* 2009; Pezzin and Schone 1999), whereas others found no effects of parenthood on care provision (Couch, Daly and Wolf 1999; White-Means and Hong 2001). In line with the family connection argument, Gallagher and Gerstel (2001) report that the presence of adolescent same-sex children (but not of other children) induces parents to provide care. Racial variations have been noted as well. According to one study, number of children seems to deter Blacks from care-giving, but encourages care by Whites (White-Means and Rubin 2008). Because adult children included in the HRS have mostly grown children, it is perhaps more important whether commitments to grandchildren reduce adult children's motivation to provide care. However, grandchildren may also serve as connections to family and in some cases assist with care (Orel and Dupuy 2002; Szinovacz 2003, 2008).

The connections between employment and parent care are quite complex. The dual demands of employment and care can lead to role conflict and increase care-givers' burden (Martire and Stephens 2003; Reid and Hardy 1999; Scharlach, Sobel and Roberts 1991; Stephens *et al.* 2001; Stoller and Pugliesi 1989*a*; Wolff and Kasper 2006), but employment can also offer resources such as emotional support from work colleagues and an outlet for other meaningful activity (Martire and Stephens 2003; Reid and Hardy 1999; Stephens and Townsend 1997; Stoller and Pugliesi 1989*a*). In addition, the causal relationship between employment and care is not clear,

partially due to endogeneity problems (Stern 1995). Some studies suggest that employed adult children are less likely to participate in care (Boaz, Hu and Ye 1999; Checkovich and Stern 2002; Dautzenberg, Diedriks and Philipsen 2000; Haberkern and Szydlik 2010; Henz 2006; Matthews 2002; Stern 1995; White-Means and Hong 2001) or to reduce their care hours (Doty, Jackson and Crown 1998; Merrill 1993; Sarkisian and Gerstel 2004), whereas others indicate that care-givers either leave the labour force, reduce work hours (Bolin, Lindgren and Lundborg 2008; Ettner 1995; Johnson and Favreault 2000; Pavalko and Artis 1997; Pavalko, Henderson and Cott 2008; Spiess and Schneider 2003; Wolff and Kasper 2006), or make other work adjustments in order to fulfil their care responsibilities (Matthews 1995; Scharlach, Sobel and Roberts 1991). In addition, several studies revealed no significant relationships between care and employment (Bullock, Crawford and Tennstedt 2003; Stern 1996) or indicate that the relationship differs by gender (Haberkern and Szydlik 2010). Of particular interest for our analyses is a study by Moen, Robison and Fields (1994) that assessed women's transitions into and out of care and employment over time. Their results indicate that employed care-giving women are more prone to stop care than employment, whereas employment had no effect on the assumption of the care-giving role.

In addition to its emphasis on the relative benefits and costs of actions, exchange theory also stresses the importance of viable alternatives (Sabatelli and Shehan 1993; Thibault and Kelley 1959), that is, individuals will be more prone to pursue relatively costly actions such as care-giving if no other alternatives are available. Care alternatives include hired help as well as support on the part of the child's siblings or other relatives.

There is some indication that children in higher socio-economic status groups (higher wages, higher education) who are more able to afford hiring formal helpers are less likely to care for their parents or spend fewer hours care-giving (Byrne *et al.* 2002; Couch, Daly and Wolf 1999; Henretta *et al.* 1997; Sarkisian and Gerstel 2004; Sloan, Picone and Hoerger 1997; Wolf, Freedman and Soldo 1997) but contradictory evidence exists as well (Dautzenberg, Diedriks and Philipsen 2000; White-Means and Hong 2001). On the other hand, there can be little doubt that help by other relatives and formal help serve as viable alternatives. Because we lack information on care by others than the adult children's siblings, our discussion focuses on this source of help (*see* below).

Gender norms

Family care continues to be viewed as women's work, rendering daughters' participation in care more obligatory than sons' (Arber and Ginn 1991;

Campbell and Martin-Matthews 2003; Matthews 2002; Shuey and Hardy 2003) and their non-participation in care potentially more costly, at least psychologically (*e.g.* guilt feelings). Sons may thus be more able than daughters to avoid care if they have 'legitimate excuses' such as competing obligations to do so (Campbell and Martin-Matthews 2003; Martin-Matthews and Campbell 1995). Consequently, daughters are more prone than sons to assume the care-giver role and to be primary care-givers (Arber and Ginn 1991; Checkovich and Stern 2002; Coward, Cutler and Mullen 1990; Henretta *et al.* 1997; Igel *et al.* 2009; Matthews 1992; Pezzin, Pollak and Schone 2008; Sloan, Picone and Hoerger 1997; Shuey and Hardy 2003; Stern 1995; White-Means and Hong 2001; Wolf, Freedman and Soldo 1997; Wong, Kitayama and Soldo 1999). Nevertheless, sons do assume some care responsibilities as helpers to their sisters or wives (Davey and Szinovacz 2008; Hequembourg and Brallier 2005; Matthews 2002). They may become primary care-givers when they are only children or have only brothers (Coward and Dwyer 1990).

Family systems and lifecourse theories

Both family systems and lifecourse theories stress the interdependence of family members (Bengtson and Allen 1993; Settersten 2003; Whitchurch and Constantine 1993). This implies that each child's contribution to parent care will be interlinked with the contributions of his or her siblings and potentially other family members. Past research supports this proposition. There is overwhelming evidence that adult children's provision of care is interdependent (Checkovich and Stern 2002). Children with more siblings are less likely to provide parent care and engage in fewer care hours than children without or with fewer siblings (Campbell and Martin-Matthews 2000; Couch, Daly and Wolf 1999; Dautzenberg, Diedriks and Philipsen 2000; Igel *et al.* 2009; Sarkisian and Gerstel 2004; Sloan, Picone and Hoerger 1997; Wolf, Freedman and Soldo 1997), although such effects seem to be more pronounced for sisters than brothers (Franks, Pierce and Dwyer 2003; Gallagher and Gerstel 2001; Gerstel and Gallagher 2001; Haberkern and Szydlik 2010; Wolf, Freedman and Soldo 1997). Although many siblings willingly collaborate in parent care and often strive for equitable contributions (Ingersoll-Dayton *et al.* 2003*a*, 2003*b*; Lashewicz *et al.* 2007), the distribution of care among adult children can also lead to interpersonal conflict and stress (Ingersoll-Dayton *et al.* 2003*a*; Strawbridge and Wallhagen 1991; Suitor and Pillemer 1996). Such conflict may revolve around issues of inequity in the distribution of care as well as concerns about siblings' interference in or control over care arrangements (Matthews 2002; Suitor and Pillemer 1996).

A second proposition of lifecourse theory pertains to the development of life realms over time and their interlinkages. Specifically, trajectories in one life realm such as employment are thought to be interlinked with other life trajectories such as parenting or care-giver careers (Settersten 2003), so that one's current status and situation in one realm may forge changes in another realm. For example, care-givers with high employment demands may decide to either reduce work or care obligations (Moen, Robison and Fields 1994).

Most care-giving research remains cross-sectional, and studies that addressed change focused either on substitutions between informal and formal care (Andrieu *et al.* 2005; Geerling *et al.* 2005; Kelman, Thomas and Tanaka 1994; Lyons, Zarit and Townsend 2000; Peek, Zsembik and Coward 1997; Stoller 1990; Stoller and Pugliesi 1989*b*) or on care-givers' careers and transitions (Burton *et al.* 2003; Lawton *et al.* 2000; Seltzer and Li 1996, 2000) without reference to their other life realms. Many of these studies indicate considerable stability in care network composition over time. Among the changes noted are the addition of adult children and other helpers (Miller and McFall 1991) and greater reliance on female helpers over time (Stoller 1990).

Only a handful of studies investigated change among individual care-givers. Data from a Massachusetts sample of frail elders collected in the mid-1980s (Jette, Tennstedt and Branch 1992) indicate that close to one-quarter of care recipients reported a change in their primary care-giver. Most of these changes involved substitutions within the group of informal carers, often from the same generation. In some of these cases, the change in primary care-giver resulted from a shift in responsibilities among previous care-givers. Changes were less common if care recipients co-resided with the care-giver.

Using data from the National Long-Term Care Survey, Dwyer *et al.* (1992) explored whether adult children started or stopped care. They found that fewer than 13 per cent of children who did not help parents with ADLs or IADLs at time 1 were providing such help at time 2. In contrast, about one-half of children giving ADL assistance at time 1 were no longer helping at time 2, and about 30 per cent of children who helped parents with IADLs at time 1 had stopped such assistance by time 2. Adult children assuming care tended to be female and more available both in regard to proximity as well as in terms of competing obligations such as employment or marital status, whereas children leaving the care network tended to be male, to live further away, and to have experienced marital changes. The authors further reported that children's care transitions were positively related. This finding may reflect changes in parents' need for care. It is thus not clear whether in cases where some children started care any children helped at time

1. Similarly, it is not known whether in cases where children stopped care at time 2 any other children continued care.

More recently, Szinovacz and Davey (2007) investigated changes in adult-child care networks using the HRS. Their analyses revealed considerable change in care-givers over a two-year period: some change in care-givers occurred in over one-half of care networks, and the primary care-giver changed in close to one-quarter of care networks. Changes were linked to the gender and marital status composition of the care network, race/ethnicity, as well as parents' needs (Szinovacz and Davey 2007). Although this study explored changes in individual adult-child care-givers, it is limited in two ways: the analyses are restricted to the family level and thus provide no information on transitions by individual adult children, and they use only a limited set of child characteristics (gender, marital status).

In summary, past research identified selected parent and child characteristics that are related to adult children's participation in care, but it tends to neglect the systemic and dynamic character of care-giving. Most research neglected to include care network characteristics such as number and gender composition of adult children and relied on cross-sectional data. This study expands earlier research by Szinovacz and Davey (2007) on changes in care-giving by adult children through longitudinal analyses at the individual child level and, at the family system level, inclusion of a larger set of child and system characteristics as explanatory variables.

Hypotheses

We present two sets of hypotheses. The first set refers to changes in care-giving by individual children (child level), the second to changes in adult-child care-givers for each parent (family system level).

At the child level, our hypotheses are based primarily on rational choice/exchange and gender norms. We suggest, first, that children whose costs of care-giving are relatively high due to competing obligations (marriage, child care, employment) or more difficult access (proximity) will be more likely to either provide no care or provide care more intermittently (either stop care after initial involvement or postpone the assumption of care), whereas children without such costs will be more prone to be continuous care-givers (hypothesis 1).

Second, in line with the argument that gender norms render care more obligatory for women and provide men with the opportunity to use legitimate excuses to avoid care, we propose that the effects of costs on care outlined under hypothesis 1 will be more pronounced for men than women (hypothesis 2).

At the family system level, our hypotheses address changes in the composition of the care network, relying on altruism, rational choice/exchange as well as systems and lifecourse theories. Altruism theory speaks to the participation of children in care but not to changes in individual children's care-giving. However, in conjunction with rational choice/exchange theory it can be assumed that parents' high needs, on the one hand, increase the burden and thus the costs of care but, on the other hand, allow for no reduction in overall care. Thus, we hypothesise that in families where parents' needs are high expansion of the care network (children starting care after time 1) and exchange of care-givers (some children stop whereas others start care at time 2) should be more common than in families where parents' needs are lower (hypothesis 3).

Additional hypotheses rely on gender norms and systems theories. In line with previous research we suggest that the gender composition of the care network impinges on change in care-givers. Given that women are normatively more obliged to provide care than men, we expect less change among all-female care networks than among those including males (hypothesis 4). Furthermore, we expect that the availability of daughters to provide care will be associated with more care network changes than the availability of sons (women who could provide care in terms of proximity to parents are likely to feel more guilt about not providing care and thus more prone to enter the network than men – hypothesis 5).

Our final set of hypotheses relies on rational choice/exchange theory in combination with the systems and lifecourse perspectives. Exchange theory suggests that children will be more likely to provide care if costs of care are relatively low and if no alternative care-givers are available. From a systems and lifecourse perspective, it can further be assumed that children's willingness to provide care will be interlinked with the composition of their sibling networks, and that the distribution of care among adult children is guided at least partly by expectations of equity (Ingersoll-Dayton *et al.* 2003*a*, 2003*b*; Matthews 2002).

At the most basic level (available alternatives) this suggests that larger adult-child networks will be more bound to experience changes in care-givers over time than smaller networks (hypothesis 6). Furthermore, adult children will not provide high-cost care (*i.e.* care when they have competing obligations or more difficult access) on a continuous basis if they have siblings, and especially if siblings are available whose care costs would be relatively low. We thus propose that care networks containing adult children providing high-cost care (in regard to competing obligations as well as in regard to other obligations to parents such as financial support or care for the other parent) will be more prone to changes in care-givers than networks who do not contain such high-cost care-givers (hypothesis 7). Similarly,

networks containing non-care-givers with few competing obligations or who are living close by (low cost) should be more likely to have changes in care-givers than those without such potentially low-cost non-care-givers (hypothesis 8).

In line with the argument that men are more likely to use legitimate excuses to avoid care than women (gender norms), we further propose that hypothesis 7 will be more pronounced for male care-givers, whereas hypothesis 8 should be more pronounced for female non-care-givers. Thus, networks containing adult sons providing high-cost care should be more prone to change than those containing adult daughters giving high-cost care (hypothesis 9), and networks containing non-care-giving adult daughters with few competing obligations should be more prone to change than those containing non-care-giver sons with these characteristics (hypothesis 10).

Methods

Sample

The analyses are based on data from waves 1–5 (1992–2000) of the HRS. Respondents aged 51–61 years and their spouses were interviewed in 1992 and followed every two years. At baseline the sample consisted of 12,652 individuals in 7,702 households. Another comparable cohort was added in 1998. Selection of households was based on a multi-stage area probability design that oversampled for minorities and Florida residents. The response rate was over 80 per cent. For further details, *see* Juster and Suzman (1995). The sub-sample used in our analyses relies on families in which adult children (the respondent and/or his/her siblings) provided care to a parent over two consecutive waves and in which respondents had at least one but no more than four siblings. The restriction to parents receiving care from a child over two waves as well as reliance on families with at least two adult children were necessary to study change in care-givers over time. The restriction to families with no more than five adult children (the respondent and up to four of his or her siblings) is based on the availability of detailed adult-child characteristics. Respondents were asked to report such characteristics (*e.g.* presence of dependants in the household, co-residence with a parent and distance from parents) only for up to four siblings. We pool data over waves, that is, if care was given to a parent in waves 1 and 2 and again in waves 2 and 3, the parent is represented twice in the sample.

We conduct two sets of analyses, one at the family level with an emphasis on network composition variables as predictors, and a second at the adult-child level focusing on child characteristics as predictors. At the family system level, help to each parent is treated as a separate care occasion. However,

only a small proportion of respondents reported help over two waves to both parents (N=43, 4.2%). The resulting sub-sample consists of 1,068 care occasions. Each care occasion represents care for one parent over a two-year period. Analyses at the family level allow us to assess whether specific parent characteristics and the composition of each parent's adult-child care-giver network influence changes in care-givers over time. In this case, change refers to alterations in the care network, *e.g.* whether *any* adult child stopped or entered the care network after time 1.

For the analyses assessing changes in care by individual children (child level), each of the adult children (including the respondent adult child) is treated as a separate case. We select only cases where at least one adult child provided care at both time 1 and time 2 and again pool data over waves. For example, if a parent has three children and at least one of these children provided care at time 1 and the same or another child provided care at time 2, then each of these three children will constitute separate occasions in the sample. This leads to a sub-sample of 1,068 families (family level) contributing a total of 3,616 care occasions at the child level (slightly over three children per parent).

Measures

Outcomes. Our outcome measures are based on the question whether the respondent or his or her siblings 'did spend a total of 50 hours or more in the past 12 months (since the previous wave) helping your parent with basic personal activities like dressing, eating, or bathing'. If the respondent indicated that s/he or a sibling had provided such help (or that their spouse or his/her siblings had provided such help for his or her parents), they were assigned care-giver status. Because hours of care were only obtained for the adult child who was the HRS respondent, but not the other adult children, we cannot include intensity of care in the analyses. At the adult-child level, each child was assigned to one of four categories: continued care (the adult child provides care at both time 1 and time 2), started care (the child did not provide care at time 1 but did assume care for the parent at time 2), stopped care (the child provided care at time 1 but not at time 2) and no care (the child did not care for the parent in either wave). For the family-level analyses, we aggregated these scores across children for each parent. Thus, we identify families in which some children stopped care, some children started care, some children continued care, and some children did not participate in parental care. Because these categories overlap, that is, in one family some children may have stopped and other children started care-giving, we created four exclusive categories: started care (some children started care but no child stopped care), stopped care (some children stopped care

between waves but no child started care), exchanged care (some children started and others stopped care), and continued care only (all time 1 care-givers remained care-givers and no children started or stopped care).

Predictors for child-level analyses. The child-level analyses rely on gender norms (measured by gender) and rational choice/exchange predictors referring to the costs of care. Gender is coded as a dummy variable (1 = female, 0 = male). The rational choice/exchange variables include: whether the child has dependants, is married, has grandchildren, is employed, and proximity. We use whether the child has dependants under 18 in the household and grandparenthood (1 = yes, 0 = no) to assess the costs of competing child-care commitments rather than whether the child is a parent because only 8.1 per cent of children were childless and most of their children were adults. Marital status of the child was coded 1 = married, 0 = not married. Employment status was coded 1 = employed, 0 = not employed. Proximity was coded into two dummy variables: whether the child co-resides with the parents (1 = yes, 0 = no), and whether non-co-resident children lived within ten miles of the parents (1 = yes, 0 = no). The reference group is children living more than ten miles from the parent. The HRS does not provide further detail on proximity.

In addition to the theoretically based variables we include two controls. The first is child's age (coded in years). Previous research indicates that children's age may influence their selection as care-givers either because parents prefer children of a specific birth order (Pezzin and Schone 1997; Sloan, Picone and Hoerger 1997; Wong, Kitayama and Soldo 1999) or because older children may be less healthy than their younger siblings and thus less able to provide care (Matthews 2002). The second control is whether the child is the HRS respondent or one of his or her siblings (1 = respondent, 0 = sibling). Earlier studies indicate that reports from different adult children diverge in their assessments of each child's care contributions (Lerner *et al.* 1991; Matthews 1992). Thus, controlling for respondent status provides some correction for response bias although it certainly cannot fully account for lack of knowledge about or misrepresentation of the respondent's siblings' contributions.

Predictors for family-level analyses. In line with the altruism perspective the first set of predictors for the family-level analyses refers to parents' needs. The main factor to assess parents' needs is parents' health status. The HRS lacks a direct measure of parents' health. Rather, respondents reported whether their parents needed assistance with personal activities and whether they could be left alone. The former measure was not used because it is implicit in the care question. We thus included only whether parents could

be left alone (1 = cannot be left alone, 0 = can be left alone). Furthermore, need may be higher in the case of end-of-life care. We thus include a dummy variable (1 = died, 0 = still alive) indicating whether the parent died between waves (a few parents who had died by time 2 still received care between waves).

In addition, parents' needs for care by their children are heightened when no alternative care-givers are available. We include marital and economic status to assess potential alternatives in the form of spouses or formal helpers. Marital status was coded (1 = married, 0 = not married). Respondents were only asked about their parents' economic status when the respondent was a child: 'Now think about your family when you were growing up, from birth to age 16. Would you say your family during that time was pretty well off financially, about average, or poor?' We created one dummy variable for those with low economic status (poor) compared to those who were average or well off (1 = low socio-economic status, 0 = medium to high socio-economic status).

Considering the influence of gender norms, we include a variable pertaining to the gender composition of the adult-child group (1 = only females, 0 = others). Preliminary analyses indicated that inclusion of another dummy variable for only male networks did not alter the results. In addition, the presence of non-care-givers living close by was subdivided into females and males with this status as were the variables pertaining to low-cost non-care-givers and high-cost care-givers at time 1 described below.

Variables based on the rational choice/exchange model include the presence of care-givers with other obligations at time 1 (dependants, grandchildren, married, employed), as well as the availability of non-care-givers without such obligations, all coded as dummy variables. Other variables pertaining to the availability of alternative child care-givers include number of children and presence of non-care-giving children at time 1 who live close to the parent. In addition, we include two other variables that may increase the burden and thus the costs of caring, namely whether children provided financial support to a parent and whether they also cared for the other parent at time 1 (both coded as dummy variables). These variables could not be included in the child-level analyses. Provision of financial support from specific siblings was not asked in wave 1 of the HRS, and inclusion of care to the other parent would have been problematic because it correlates with the outcome variable.

Because previous research showed race or ethnic differences in adult-child care-giving and care networks (Dilworth-Anderson, Williams and Gibson 2002; Pinquart and Sorensen 2005; Sarkisian and Gerstel 2004; Sudha and Mutran 1999; White-Means and Hong 2001; White-Means and Rubin 2008), we control for parents' race or ethnicity. We differentiate among African Americans, Hispanics, and those of other race, with Whites as

TABLE 1. *Descriptive statistics for study variables*

	%	SD
Child level:		
Child is respondent	29.63	0.457
Child female	56.38	0.496
Child's age (mean)	56.354	7.800
Child has dependants	20.50	0.404
Child has grandchildren	73.50	0.441
Child lives close to parent	37.87	0.485
Child lives with parent	10.27	0.304
Child married	70.77	0.455
Child works	61.03	0.488
Family system level:		
Parent female	83.44	0.372
Black	13.87	0.346
Hispanic	6.44	0.245
Other race	1.67	0.128
Parent married	16.21	0.369
Parent lives with a child	33.26	0.471
Parent cannot be left alone	64.35	0.479
Children provide financial support t1	29.25	0.455
Parent low economic status	28.50	0.451
Number of children (mean)	2.378	1.043
Children care for other parent	5.37	0.225
Parent died between waves	28.99	0.454
Data from waves 1–2	22.61	0.418
Data from waves 2–3	25.04	0.433
Data from waves 3–4	21.37	0.410
Only female care-givers t1	59.31	0.491
Care-givers with dependants t1	27.27	0.445
Care-givers with grandchildren t1	83.89	0.368
Married care-givers t1	77.80	0.416
Working care-givers t1	67.86	0.467
Non-care-givers without dependants t1	74.43	0.436
Non-care-givers without grandchildren t1	36.78	0.482
Non-married non-care-givers t1	35.64	0.479
Non-working non-care-givers t1	43.35	0.496
Female non-care-givers living close t1	18.34	0.387
Male non-care-givers living close t1	22.95	0.421

Notes: SD: standard deviation. t1: time 1.

reference group. Another control is whether the parent lives with any child. We further control for the HRS wave from which the data were drawn to account for potential divergent response biases in different waves. Descriptive statistics for all predictors are shown in Table 1.

Analyses

Child-level analyses consisted of fixed-effects multinomial logistic regression models adjusting for non-independence of observations based on household

number, parent and occasion of measurement. These models isolate factors associated with a child's probability of changing status within a given family. Factors that do not vary across children within the family, both measured and unmeasured, are not evaluated but are implicitly controlled. The system-level analyses rely on multinomial logistic regressions and adjust for non-independence of observations by specifying clusters (by household number) and robust standard errors. All analyses were performed across multiple imputations with Rubin's rules used to establish MI inference (Little and Rubin 1989; Schafer 1997) and rely on $\alpha=0.05$ for hypothesis testing.

Results

Changes in care-givers

We first assessed the prevalence of changes in care-givers both at the family system and at the child levels. At the family system level, we find that change in care-givers occurred in 45.8 per cent of families. In 17 per cent of families a care-giver was added to the care network without any child stopping care, whereas in 21 per cent of care networks a child stopped care without another child assuming care. Exchange of care-givers occurred in 7.8 per cent of networks, that is, at least one child started and another stopped care. At the adult-child level, our data indicate that 38.3 per cent of the adult children (who could range in number from two to five in families) provided continuous care, 9.4 per cent started care at time 2, 11.2 per cent stopped care after time 1 and 41.1 per cent provided no care. Thus, slightly over one-third of the children involved in care (*i.e.* excluding children who provided no care at all) were not continuous care-givers.

Predictors of changes in care-givers (child level)

Our main analyses focus on factors associated with changes in care-givers over time. We first explore changes at the child level and then change at the family system level.

The child-level analyses are shown in Table 2. The first model in Table 2 addresses main effects of child characteristics and the second model adds gender interactions. Our first hypothesis, based on rational choice/exchange theories, predicted that children would be less likely to engage in continuous care if they have competing obligations or do not live close to parents. The data support the effect of proximity but not of competing obligations. Children who live close to or with parents are significantly more likely to provide continuous care than children living further away.

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TABLE 2. *Fixed effects multinomial logistic regression for change in children's care for parents (child level)*

	Model 1			Model 2		
	Start *versus* continue	Stop *versus* continue	Not *versus* continue	Start *versus* continue	Stop *versus* continue	Not *versus* continue
Gender norms:						
Child female	−0.962**	−0.963**	−1.446**	0.351	−0.709	−1.013
Competing obligations (costs):						
Child has dependants	0.163	0.068	0.071	0.397	0.222	0.114
Child has grandchildren	−0.026	−0.137	−0.249	−0.254	−0.148	−0.343
Child lives close to parent	−1.014**	−0.874**	−2.035**	−0.624**	−0.461	−1.785**
Child lives with parent	−3.234**	−2.178**	−5.415**	−2.308**	−0.942*	−4.393**
Child married	−0.149	0.057	−0.234	−0.214	−0.173	−0.281
Child works	0.355	−0.077	0.119	0.449	−0.124	0.064
Controls:						
Child's age	0.018	0.011	0.017	0.031	0.018	0.024
Child is respondent	−0.539**	−1.004**	−0.555**	−0.544**	−1.011**	−0.560**
Gender interactions:						
Child's age × female				−0.019	−0.002	−0.007
Child has dependants × female				−0.411	−0.179	0.000
Child has grandchildren × female				0.437	0.033	0.195
Child lives close to parent × female				−0.654*	−0.704*	−0.401
Child lives with parent × female				−1.510*	−2.054**	−1.657**
Child married × female				0.055	0.360	0.050
Child works × female				−0.162	0.117	0.100
Intercept	−1.225**	−1.048**	0.035	−1.243**	−1.073**	0.020
Df	27			48		
LR χ^2	589.02**			604.78**		
N	3601			3601		

Notes: df: degrees of freedom. LR: Likelihood ratio.
Significance levels: *$p<0.05$; **$p<0.01$.

In contrast, we find no effects of employment, marriage, dependants or grandparenthood on children's change in care.

We also predicted that gender norms would render care more obligatory for women and thus increase the likelihood of continuous care by daughters compared to sons (hypothesis 2). This hypothesis was supported. Daughters are significantly more likely to be continuous care-givers than sons. We also find a significant effect for respondent, suggesting that the HRS respondents attribute more continuous care to themselves than to their siblings.

The second model includes interaction effects of the cost variables with child's gender. Two interactions reach significance: daughter × child lives with parent and daughter × child lives close to parent. These findings suggest that being female reinforces the mandate of parent care for children living close to or with the parent. They also confirm that sons use the 'legitimate excuse' of living further away to shirk parent-care responsibilities.

Predictors of changes in care-givers (system level)

The system-level analyses for change in care-givers are shown in Table 3. We estimated two models. The first model, testing hypotheses 3–8, addresses altruism (parents' needs), gender norms, as well as selected system-level competing obligation and alternatives factors (rational choice/exchange). The second model, addressing hypotheses 9 and 10, includes system composition variables differentiated by gender (systems theory in conjunction with rational choice/exchange and gender norms).

Our data provide relatively little support for the altruism hypothesis (hypothesis 3). We find no significant effects for parents' health (can be left alone), marital status and economic status. We find a significant effect for death of parent. Contrary to our hypothesis, care-givers were more likely to end care if their parent died between waves. Perhaps shifts in location such as to a nursing home or hospice or increased reliance on formal care-givers in parents' home account for this result.

Our next hypotheses dealt with the influence of gender norms. Specifically, we predicted that only-daughter care networks would be less prone to change than networks containing sons (hypothesis 4). This hypothesis is supported. In care networks consisting exclusively of daughters care-givers ending care or an exchange of care-givers are significantly less likely than in networks containing sons. Similarly, the data support the expectation (hypothesis 5) that the availability of female but not of male non-care-givers at time 1 would increase the chances of a child entering the care network. A delayed start of children as care-givers prevails among networks that include female non-care-givers who live close to the parent,

TABLE 3. *Multinomial logistic regressions for change in adult-child care-givers (family system level)*

	Model 1			Model 2		
	Care-givers start *versus* no change	Care-givers stop *versus* no change	Care-giver exchange *versus* no change	Care-givers start *versus* no change	Care-givers stop *versus* no change	Care-giver exchange *versus* no change
Altruism:						
Parent cannot be left alone	0.199	0.133	0.247	0.249	0.267	0.266
Parent died between waves	0.143	0.586**	0.528	0.136	0.524**	0.614*
Parent low economic status	0.308	0.301	0.532	0.295	0.351	0.527
Parent married	−0.036	−0.181	0.254	0.028	−0.151	0.212
Gender norms:						
Only female care-givers t1	−0.020	−0.900**	−0.984**			
Female non-care-givers living close t1	0.542*	−0.195	0.224			
Male non-care-givers living close t1	0.277	−0.430	−0.203			
Rational choice/exchange (costs and alternatives):						
Number of children	0.217	0.722**	0.962**	0.280*	0.709**	1.004**
Children care for other parent	0.804	0.677	−0.157	0.709	0.685	−0.020
Children provide financial support t1	0.204	0.540**	0.316	0.207	0.579**	0.268
Care-givers with dependants t1	0.288	0.592**	0.629			
Care-givers with grandchildren t1	−0.291	0.981**	0.697			
Married care-givers t1	−0.192	0.926**	0.339			
Working care-givers t1	−0.064	0.413	−0.120			
Non-care-givers without dependants t1	1.269**	−0.565*	1.240*			

Non-care-givers without grandchildren t1	−0.204	−0.761**	−0.137			
Non-married non-care-givers t1	−0.150	−0.351	−0.066			
Non-working non-care-givers t1	−0.044	−0.543*	−0.402			
Rational choice and gender norms						
Female care-givers with dependants t1				0.195	0.358	0.043
Female care-givers with grandchildren t1				−0.269	1.014**	0.283
Female married care-givers t1				−0.112	0.579*	0.142
Female working care-givers t1				−0.118	0.182	−0.228
Male care-givers with dependants t1				0.198	0.690	1.318*
Male care-givers with grandchildren t1				0.086	0.883**	0.986
Male married care-givers t1				−0.463	−0.078	−0.653
Male working care-givers t1				−0.021	0.726*	0.332
Female non-care-givers without dependants t1				0.580*	−0.675**	0.535
Female non-care-givers without grandchildren t1				−0.279	−0.176	−0.241
Female non-married non-care-givers t1				−0.104	−0.193	−0.448
Female non-working non-care-givers t1				0.182	−0.523	−0.417
Male non-care-givers without dependants t1				0.284	−0.867**	−0.070
Male non-care-givers without grandchildren t1				−0.050	−0.698**	−0.142
Male non-married non-care-givers t1				−0.088	−0.263	0.169
Male non-working non-care-givers t1				−0.252	−0.441	−0.141

TABLE 3 (*Cont.*)

	Model 1			Model 2		
	Care-givers start *versus* no change	Care-givers stop *versus* no change	Care-giver exchange *versus* no change	Care-givers start *versus* no change	Care-givers stop *versus* no change	Care-giver exchange *versus* no change
Controls:						
Parent female	−0.188	−0.205	0.081	−0.220	−0.159	0.037
Parent lives with a child	−0.394	0.464*	0.255	−0.324	0.458*	0.193
Black	−0.350	−0.123	0.024	−0.275	−0.093	0.072
Hispanic	0.014	−0.161	0.902*	0.025	−0.222	0.769
Other race	0.547	−0.970	−1.005	0.448	−0.891	−1.103
Data from waves 1–2	0.203	0.021	0.476	0.141	0.043	0.506
Data from waves 2–3	0.263	−0.010	−0.528	0.251	0.088	−0.464
Data from waves 3–4	0.254	0.797**	0.946**	0.273	0.764**	0.935**
Intercept	−2.632	−3.981	−6.781	−2.072**	−4.268**	−6.146**
χ^2	342.778**			352.654**		
N	1065			1065		

Note: t1: time 1.
Significance levels: *$p<0.05$; **$p<0.01$.

whereas the presence of proximate male non-care-givers has no significant effect on network changes.

Hypothesis 6, based on the availability of alternative care-givers, is supported by the data. We find that changes in care-givers are more common the more adult children the parent has.

There is also limited support for hypothesis 7 which predicts that care networks including children providing high-cost care will be more likely to experience changes in care-givers than other networks. As might be expected, care networks containing high-cost care-givers (children who provide financial support to parents, children with dependants, who have grandchildren or who are married) are significantly more likely to have one or more adult children stop care. It is interesting to note that care-givers who stop care are apparently not replaced by other children as we find no significant effects for starting care or exchange of care-givers. The only high-cost factors that have no effect on changes in care-givers are employment and care for the other parent. Care networks containing employed adult children or children caring for the other parent are not more likely to experience changes in care-givers than those without employed care-givers or with exclusive care to the target parent in the analyses.

The next hypothesis (hypothesis 8) proposes more change among care networks that include low-cost non-care-givers. This hypothesis also receives very limited support. Specifically, networks including non-care-givers without dependants are more prone to have children starting or exchanging care. However, contrary to our hypothesis, families containing non-care-givers without grandchildren, non-care-givers who were not working at time 1, and non-care-givers without dependants are also less likely to have children leave the network.

Gender-specific tests of the cost-related variables are addressed in model 2 (hypotheses 9 and 10). To avoid multicollinearity problems, this model excludes the gender norm variables from model 1. The only significant effects in support of hypothesis 9 are that children are more likely to stop if the network includes male employed care-givers but not if it includes female employed care-givers, and that among systems including male care-givers with dependants an exchange of care-givers is more likely. We again note that networks including care-givers with grandchildren are more prone to have children leave the network, but this effect holds regardless of whether the care-givers with grandchildren are sons or daughters. Dropping out of children prevails if the network includes married female care-givers but not if it includes married male care-givers at time 1, suggesting that marital status is a more important barrier to care for female than male care-givers. Thus, we find support for the legitimate excuses hypothesis in regard to employment and dependants but not in regard to other competing obligations.

In support of hypothesis 10 we find that the presence of female but not of male non-care-givers without dependants enhances the probability of a child entering the network late. However, contrary to the hypothesis, the presence of non-care-givers without dependants also decreases the chances that a child will leave the network, and this trend holds both for male and female non-care-givers. Systems including male non-care-givers without grandchildren are also less likely to have a child stop care.

Conclusion

In this paper we explored the extent and predictors of changes in adult-child care-givers and care networks. Our data confirm that care networks have dynamic and systemic qualities: care-givers change over time and such changes depend to some extent on the composition of the adult-child group and the network of initial care-givers and non-care-givers.

As far as care dynamics are concerned, we find that about 46 per cent of parents experienced a change in their care networks over time. This proportion is considerably higher than that reported for primary care-givers by Jette, Tennstedt and Branch (1992), most likely due to our reference to change in all care-givers in contrast to just primary care-givers. At the child level, our data also differ from those reported by Dwyer *et al.* (1992) who found that 13 per cent of children who did not help with ADLs at time 1 started care and about one-half of those providing such assistance at time 1 stopped care, whereas our data indicate that 22.7 per cent of children providing care at time 1 had stopped by time 2, and 18.6 per cent of those providing no care at time 1 started care. These differences may be partly due to divergent sample selection. We refer only to families in which some children helped parents at both times, whereas Dwyer *et al.* did not restrict their sample in this way. Thus, parents who received exclusive help from non-child helpers at either time 1 or time 2 were included in their sample. Similar to Dwyer *et al.* (1992), we do find that children are more prone to stop than to start care and that the proportion of networks experiencing cessation of care by an adult child is somewhat larger than the proportion of networks undergoing addition of a care-giver, indicating that care networks shrink slightly over time (mean = 1.67 care-givers at time 1 and 1.61 care-givers at time 2).

These results offer two important insights into care networks. They first indicate that a static view of care networks is unwarranted – adult-child networks change over time, although there is considerable stability in individual care-givers as well. As lower fertility cohorts become care-givers in the near future, children's opportunities for stopping or delaying care

(or not to enter care networks at all) will decline. It is not clear whether this means that care-giver burden will intensify for these new cohorts. The availability of other adult children may, on the one hand, decrease burden because it allows overburdened adult children to leave care networks or delay their entry into the network, but it may also increase the potential for conflict among adult children which can contribute to burden (Suitor and Pillemer 1996). Furthermore, as Davey and Szinovacz (2008) show, the assumption of care by adult children who enter the care network late seems to be particularly depressing, perhaps because these children are more reluctant to provide care. Additional research is needed to further explore this issue. Recognition of the dynamics of care networks is also important for service providers. For example, instructions and advice provided to one care-giver may be lost in transition to new care-givers.

The second insight gained from these results is that data on both adult-child care-givers and adult-child care networks are needed to provide a full picture of care situations. For example, we note that close to one-half of networks experience a change in care-givers, whereas the child-level data indicate that a much smaller proportion of all adult children changed care provision. Thus, exclusive reliance on either child-level or system-level data can yield misleading results.

We assessed four groups of predictors on care-giver change. Based on the altruism model (Silverstein *et al.* 2002; Stern 1995), we expected parental need (health, marital status) to encourage care-giver change due to potential exhaustion of care-givers with very needy parents. We found only meagre support for the assumption that extent of parents' need influences changes in care-givers. It seems that parents' needs determine primarily whether or not children provide care but not whether they remain care-givers. However, our health measure (whether the parent can be left alone) was very crude. What the data do suggest is that multiple support obligations (concurrent financial needs of the parent receiving care) entice change. End-of-life care also seems to encourage cessation of care but it is not clear whether this reflects care-givers' response to care burden under these circumstances or increased reliance on formal care toward parents' end of life.

As far as children's motivation to care is concerned, our data restricted us to explore rational choice/exchange hypotheses that focused on competing obligations and proximity. The child-level analyses provide only support for ability in terms of geographical proximity to the parent or co-residence but no support for competing obligations. One possible explanation for this finding is that proximity overrides other constraints, and that children's location decisions reflect outcomes of negotiations among children in regard to each child's future care responsibilities as some earlier research

suggests (Stern 1995). It is also conceivable, as other research suggests (Bolin, Lindgren and Lundborg 2008; Ettner 1995; Johnson and Favreault 2000; Pavalko and Artis 1997; Pavalko, Henderson and Cott 2008; Spiess and Schneider 2003; Wolff and Kasper 2006), that children make adjustments in their other commitments such as employment to accommodate their care obligations. Because we lack information on when changes in care or in employment occurred, we cannot test the sequencing of such changes.

We do find obligation effects in the system-level analyses. Networks including children with competing obligations are more likely to have a child drop out of the network. That networks including non-care-givers with few obligations (no dependants, no grandchildren) are less likely to have children leave the network contradicts the available alternatives hypothesis. In these families some children may be assigned the care-giver role regardless of competing obligations because their siblings are unable (for reasons we cannot capture with our data) or unwilling to provide care.

The different findings at the child and system levels suggest the need for very complex analyses that consider the child's proximity to the parent in combination with the child's other obligations and the availability and obligations of the child's siblings. Alternatively, in-depth analyses similar to those offered by Finch and Mason (1993) may be needed to capture the dynamics of care decisions and negotiations among siblings over time, but of course inferences from such analyses may be limited when samples are small or non-representative.

However, the available alternatives hypothesis is not without merit. As shown in all models, delayed entry, stopping and exchange of care-givers increases with the number of children in the family. The strong effect of network size indicates that the availability of alternative adult-child care-givers allows changes in care-givers. Care-givers seem to take advantage of opportunities to shift care responsibilities to a sibling, or to leave the network knowing that their siblings will continue to provide care. A larger adult-child group also seems to protect some children from having to take on the care-giver role or, alternatively, allow some children to shirk such responsibilities. Demographic changes that will reduce the size of future adult-child care networks (Uhlenberg and Cheuk 2008) will curtail opportunities for adult children to leave care responsibilities to their siblings.

We also find support for the influence of gender norms. Specifically, networks including only female care-givers at time 1 are significantly less likely to have a child stop care or an exchange of care than other networks, suggesting that male or mixed-gender networks are more volatile than female-only networks. It is also telling that systems including married female care-givers and male working care-givers are more likely to experience a

child stopping care, a trend that suggests that different competing obligations may matter for men's and women's care involvement. This suggests that daughters are not only more likely to be continuous care-givers, they do so under more difficult circumstances than men such as when they do not live close to parents. Thus, the legitimate excuses hypothesis seems to apply not only to the assumption of care but also to the stability of care. Furthermore, women seem more inclined than men to take on care when needed. This is suggested by our finding that the probability of adding a child to the network is higher when female but not male children without initial care responsibilities live close by.

Our research has several limitations. Foremost among them is the limited information on parents and adult children included in the HRS. For example, we lack detailed health and economic information on parents as well as adult children. Similarly, the HRS does not include information on the amount of time children devote to care and to other potentially competing roles. However, such information would be essential to estimate whether and to what extent adult-child care-givers strive to achieve an equitable distribution of care responsibilities for their parents. Although previous research has addressed this issue, most of these studies relied on small, non-representative samples (Hequembourg and Brallier 2005; Ingersoll-Dayton *et al.* 2003*a*, 2003*b*; Matthews 1987, 1995).

Another limitation is the difficulty to combine system characteristics and individual child characteristics in the same models, partially because of interdependence between system characteristics, individual child characteristics, and outcome variables (*e.g.* participation in care over time) in small adult-child groups.

A third limitation pertains to the reliance on responses from one adult child, the HRS respondent, which may introduce some response bias in the analyses. We consequently controlled for respondent status in the analyses, but this does not eliminate underreporting of care for the respondent's siblings. Indeed, our analyses indicate that respondents are more prone to report continuous care for themselves than for their siblings. Because the HRS data are based on a random sample of households, these results are unlikely to reflect sample selection bias and more likely due to response bias. This interpretation is in line with earlier research indicating divergent responses by adult children about their own and their siblings' care contributions (Lerner *et al.* 1991; Matthews 1992).

Taken together, our findings have important implications for research and policy. They underline the importance of shifting investigations on care-giving from a focus on individual care-givers and cross-sectional approaches to dynamic and systemic analyses. Such analyses are especially important to assess to what extent changing parental needs and filial obligations prompt

adjustments in care systems and how small networks cope with lacking alternative care-givers within the adult-child group. In addition, research should address whether shifting of care responsibilities lightens care-givers' burden and how adult children negotiate such shifts. From a policy perspective, it would be particularly important to tie changes in adult-child care networks and in the composition and size of such networks to the use of formal help and institutionalisation. If future research showed that larger networks or changes among care-givers help to reduce reliance on formal care, then needs for formal care are likely to increase as future smaller cohorts become care-givers.

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