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Residential care and care to community-dwelling parents: out-selection, in-selection and diffusion of responsibility

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ABSTRACT
Research suggests that adult children are less likely to provide care to community-dwelling parents when beds in residential care settings are more widely available. The underlying mechanisms are not well understood. Drawing on data from the Survey of Health, Ageing and Retirement in Europe (SHARE) on 1,214 impaired parent–child dyads from 12 countries, we find that adult children are less likely to provide care in countries where beds in residential care settings are more widely available because (a) parents' care needs are less severe in such countries (*out-selection hypothesis*) and (b) adult children and impaired parents are less likely to share a household in such countries (*in-selection hypothesis*). Finally (c), after taking these two factors into account, adult children remain less likely to provide care in countries where beds in residential care settings are more widely available (*diffusion of responsibility hypothesis*). Plausibly, being able to rely on residential care undermines adult children's sense of urgency to step in and provide care to their parents.

KEY WORDS – crowding out, substitution, long-term care, informal care, intergenerational solidarity, family care-giving.

Introduction

Population ageing and the associated greater need for long-term care imply a challenge for policy makers to balance safeguarding financial sustainability and providing adequate long-term care for those in need. In many countries, part of the solution to this puzzle is sought in caring for impaired elderly in the community rather than in residential care settings (Pavolini and Ranci 2008; Rostgaard 2002, 2011) and, related to this, in maintaining or

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activating informal care-giving resources (Le Bihan and Martin 2012; Österle and Rothgang 2010). Particularly family members are increasingly perceived as important potential care-givers (Grootegoed, Duyvendak and Van Barneveld 2015; Österle and Rothgang 2010; Pavolini and Ranci 2008).

In the current study, we explore the relationship between the availability of beds in residential care settings and the provision of care by adult children to impaired community-dwelling parents. When available, spouses are impaired persons' preferred source for care (Litwak 1985; Messeri, Silverstein and Litwak 1993; Stoller and Earl 1983). However, due to widowhood, divorce or never having been married, many older adults cannot fall back on a spouse when they are confronted with declines in functional capacities. Given that marital instability in European countries as well as in the United States of America has been increasing (Amato and James 2010), the presence of a spouse when care needs occur is even less self-evident for future generations. Therefore, the role of adult children – the other main source of family care (Dykstra 2015) – is likely to become even more central than it is today. Given the primacy of spousal care over intergenerational care-giving when spouses are present, we focus on intergenerational care-giving to community-dwelling parents lacking a spouse or partner.

Many scholars have explored the way the care that adult children provide to parents is related to formal care services. In the bulk of this work, the focus is on formal home care services. Recent research suggests, however, that the availability of beds in residential care settings also has an impact on intergenerational care-giving to impaired community-dwelling older adults. Pickard (2012) noted a decline in intense care provision to older parents in England by co-resident adult children between 1985 and 1990, which she attributed to the risen numbers of people aged 80 and over in residential care. She also showed that between 1995 and 2000, when residential care became less widely available, the numbers of people aged 80 and over receiving intense care from co-resident children began to rise again. A similar finding was reported by Ulmanen and Szebehely (2015), who showed that care provision by independently living adult children and friends to community-dwelling impaired older Swedes increased considerably in the first decade of the 21st century. The authors attributed the change to the dramatically declining coverage of residential care in Sweden over the same period.

The mechanisms underlying the negative association between the availability of residential care and the provision of care to community-dwelling older parents by their adult children have thus far not been explicated and tested. Pickard (2012) and Ulmanen and Szebehely (2015) have suggested that this negative association may in part be mediated by the levels of care needs among community-dwelling parents. Consistent with this

idea, Haberkern and Szydlik's (2010) cross-national analysis of intergenerational care provision in Europe showed a negative association between the availability of residential care and care provision from adult children to their parents that was no longer statistically significant in a multivariate model which controlled for many characteristics of the parent and the adult child, including the parent's physical limitations. The studies summed up here, while providing valuable suggestions for a potential explanation of the negative association between the availability of residential care and intergenerational care-giving to community-dwelling older parents, do not provide a direct test of the supposed underlying mechanism. Furthermore, additional theoretical explanations can be developed and tested. The current study is a first attempt to do so. We use data from the Survey of Health, Ageing and Retirement in Europe (SHARE) enriched with country-level information from the MULTILINKS database of social policy indicators to answer the following research question:

- How does the availability of beds in residential care settings shape adult children's provision of care to community-dwelling impaired parents lacking a spouse or partner?

Theoretical background and hypotheses

In the current study, we follow Walker, Pratt and Eddy's (1995) conceptualisation of care. In their view, one can only speak of care when the receiving individual is dependent on another person for any activity essential for daily living, such as dressing, bathing, and getting in and out of bed (*cf.* Haberkern and Szydlik 2010). Emotional support and practical help, for instance with regard to household tasks or paperwork, thus do not fall within the definition of care (*cf.* Brandt, Haberkern and Szydlik 2009). We use the term residential care settings for non-domestic residential or institutional settings where care services for older adults are provided (*cf.* Howe, Jones and Tilse 2013).

As Pickard (2012) pointed out, most scholarly work on the relation between formal and informal care has focused on formal home care. The substitution model (Greene 1983) holds that informal care provision to a person in need is lower when this person receives formal home care. Other scholars have argued that formal home care and informal care complement, rather than substitute, each other. Complementarity can come either in the form of task-specific division of labour (Litwak 1985; Messeri, Silverstein and Litwak 1993; *cf.* Brandt, Haberkern and Szydlik 2009) or by formal home care professionals and informal care-givers

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sharing similar care tasks (Chappell and Blandford 1991). In the former theoretical model, the provision of formal home care enables a division of labour, with formal care-givers taking on demanding care tasks for which they received professional training, *e.g.* nursing and personal care, allowing family members to focus on tasks for which they are best equipped, *e.g.* practical help and emotional support. In the latter theoretical model, there is a positive association between formal care and family care, because family members are more inclined to provide care to a relative when burdens are lightened due to the sharing of the overall care load with formal care-givers.

The substitution thesis and the models of complementarity suppose a relationship between actual receipt of formal care services and support from informal care-givers. Given that community-dwelling impaired older adults are by definition not in residential care settings, none of the models briefly described here helps to explain why family care-giving to community-dwelling older adults is less common when beds in residential care settings are more widely available. To understand better the association between the availability of beds in residential care settings and adult children's provision of care to community-dwelling impaired parents, new theoretical mechanisms need to be developed and tested. Drawing on the work of Pickard (2012) and Ulmanen and Szebehely (2015), we formulate an *out-selection* hypothesis. In addition, we describe two new potential mechanisms that we capture, respectively, in our *in-selection* and *diffusion of responsibility* hypotheses. A schematic overview of the three hypotheses to be tested in the current study is presented in Figure 1.

The availability of beds in residential care settings has an impact on who resides in the community and who does not. As described earlier, Pickard (2012) and Ulmanen and Szebehely (2015) have suggested that the negative association between the availability of residential care and the provision of care to community-dwelling older individuals by their adult children may in part be mediated by the prevalence of severe care needs among community-dwelling individuals. It is well-established that adult children are more likely to provide care to parents when the latter's care needs are more severe (Blomgren *et al.* 2012; Brandt, Haberkern and Szydlik 2009; Haberkern and Szydlik 2010; Ogg and Renaut 2006; Vlachantoni *et al.* 2015). When beds in residential care settings are relatively widely available, particularly older adults with severe needs will more often be admitted to residential care settings, and thus be selected out of the community (*cf.* Greene and Ondrich 1990; Grundy and Jitlal 2007). As a result, the average level of need of those remaining in the community can be expected to be lower. These considerations lead us to formulate our *out-selection* hypothesis:

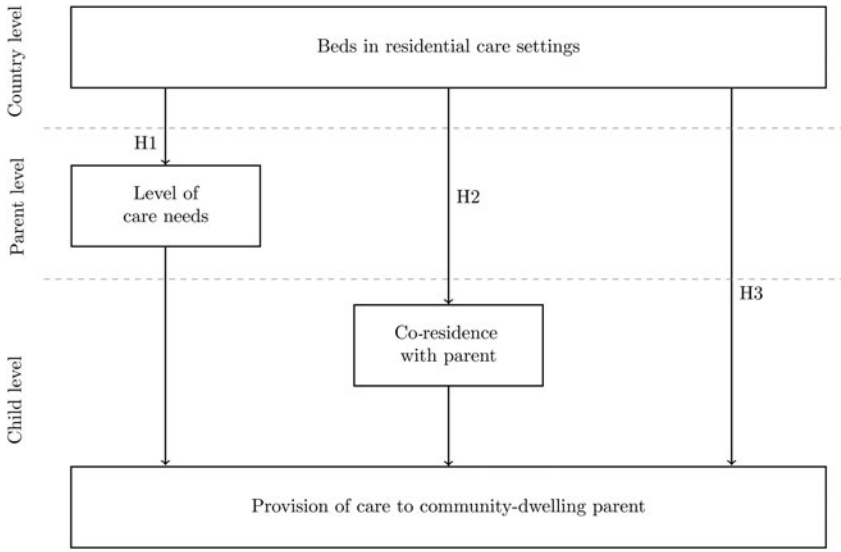

Figure 1. Conceptual model.
Notes: H1: Hypothesis 1. H2: Hypothesis 2. H3: Hypothesis 3.

- Hypothesis 1: The impairments of community-dwelling older parents with care needs tend to be less severe in countries where beds in residential care settings are more widely available, and consequently their adult children are less likely to provide care.

The availability of beds in residential care settings may also determine the extent to which impaired older adults and their adult children select themselves into living arrangements with an optimal opportunity structure for intergenerational family care-giving. Unlike, for instance, emotional or financial support, the provision of care requires the physical presence of the care-giver. It is, therefore, not surprising that geographical distance between parent and the adult child hampers the adult child's provision of care (Brandt, Haberkern and Szydlik 2009; Haberkern and Szydlik 2010; Leopold, Raab and Engelhardt 2014; Ogg and Renaut 2006). The barriers to provide care are lowest when the adult child and the parent share a household (*cf.* Silverstein 1995). Co-resident adult children are more likely than their independently living counterparts to take on the role of care-giver (Leopold, Raab and Engelhardt 2014). When an older parent is confronted with care needs, sharing a household with an adult child may therefore be a viable strategy. Research has shown, however, that other strategies are preferred. When receiving care in one's own home is no longer possible, people in West European countries generally prefer a move to a residential care setting over moving in with an adult child

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(Huber *et al.* 2008). This preferred option is less viable in countries where beds in residential care settings are less widely available. Under those circumstances, older adults might be compelled to move in with an adult child in order to receive the care that they need (*cf.* Choi 2003; Silverstein 1995; Smits, Van Gaalen and Mulder 2010). This brings us to our *in-selection* hypothesis:

- Hypothesis 2: Adult children are less likely to share a household with impaired community-dwelling parents in countries where beds in residential care settings are more widely available, and consequently they are less likely to provide care.

Finally, the availability of beds in residential care settings may have an impact on intergenerational family care-giving to community-dwelling older adults that goes beyond selection. It shapes the context in which adult children decide whether they will provide care to community-dwelling impaired parents. The bare presence of widely available beds in residential care settings may foster 'social shirking' (Sagan 2004; *cf.* Perrow 1985) or, in social-psychological terminology: diffusion of responsibility (Darley and Latané 1968; Nadler 2012). Adult children may perceive the wide availability of beds in residential care settings as a back-up system guaranteeing adequate provision of care to impaired older adults when relatives cannot or do not provide the care needed. The awareness of the presence of this safety net may undermine adult children's sense of urgency to step in and provide care to their impaired parents (*cf.* Perrow 1984). This leads us to formulate a *diffusion of responsibility* hypothesis:

- Hypothesis 3: Adult children are less likely to provide care to impaired community-dwelling parents in countries where beds in residential care settings are more widely available, even when differences in the severity of care needs and the prevalence of parent–child co-residence are accounted for.

Data

Data for our analyses were taken from SHARE, a longitudinal, cross-national data-set on the health, socio-economic status and social relations of European individuals of 50 and older (Börsch-Supan *et al.* 2008, 2013). To increase statistical power and maximise the number of countries in our sample, data from the first and second waves were pooled.

Wave 1 data were collected in 2004 and 2005 in Austria, Belgium, Denmark, France, Germany, Greece, Israel, Italy, the Netherlands, Spain, Sweden and Switzerland. Wave 2 data were collected in 2006 and 2007 in

the same countries, except Israel, and furthermore in the Czech Republic, Ireland and Poland. For countries that were also represented in the first wave, the SHARE team focused on re-contacting Wave 1 respondents. However, a 'refresher' sample was also drawn in all first-wave countries except Austria and the Flemish part of Belgium. We did not use the Wave 3 data-set, collected in 2008 and 2009, as it was not comparable with the prior two waves due to its focus on life histories. We did not use Wave 4 and Wave 5 data, collected, respectively, in 2010–11 and 2013–14, because information about the provision of personal care was not collected.

SHARE micro-data were enriched with a country-level indicator from the MULTILINKS database of comparative social policy indicators (Keck and Saraceno 2011).[1] This database offers comparative social policy indicators for 27 European Union countries plus Norway, Russia and Georgia. It was created as part of the MULTILINKS research programme (Dykstra and Komter 2012).

We selected respondents who had adult children but no non-adult children, were not living with a spouse or partner, and were coping with limitations performing at least one activity of daily living (ADL).[2] In the SHARE questionnaire, parents were asked to provide extensive information about up to four of their children. Per parent, we randomly selected one parent–child dyad observation. Respondents from Switzerland and Israel were excluded, because no country-level information was available in the MULTILINKS database. Furthermore, we excluded respondents with missing values on any of the variables of our interest. Our final sample consists of 1,214 impaired parent–child dyads nested in 12 countries: Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain and Sweden.

Measures

Dependent variable

Our dependent variable is a dichotomous variable indicating whether or not an adult child provided care to the impaired parent. The design of SHARE's questionnaire necessitated us to code this dummy variable separately for adult children who shared a household with the impaired parent and for those who did not. Coding for the latter category was based on questions regarding out-of-household support received by the impaired parent. Impaired parents were asked whether they received any kind of support from any family member outside the household, or any friend or neighbour, during the last 12 months.[3] Parents who indicated that they received support from outside the household were asked to name up to three

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persons who gave support most often. For each mentioned person, respondents were asked whether the provided support included personal care, such as help with dressing, bathing or showering, eating, getting in and out of bed, or using the toilet. We coded a non-co-resident adult child as a provider of care when the impaired parent mentioned this child as an out-of-household provider of assistance with personal care tasks. For co-resident adult children, coding was based on questions regarding intra-household support with personal care. Impaired parents were asked whether there was someone living in their household who had helped them regularly during the last 12 months with personal care, such as washing, getting out of bed or dressing.[4] We coded a co-resident adult child as a provider of care when the impaired parent mentioned this child as an intra-household provider of assistance with personal care tasks.

Child characteristics

Our in-selection hypothesis supposes that parent–child co-residence mediates the negative association between the availability of beds in residential care settings and the likelihood that a given adult child will provide care. We therefore included a dummy variable that distinguished adult children who shared a household with the impaired parent from those who did not.

Drawing on Andersen and Newman's (1973; Andersen 1995) behavioural model of health services' use, we included several measures that capture predisposing and enabling factors for filial care-giving.[5] A dummy variable was included to distinguish daughters and sons. The adult child's age was recoded into a categorical variable with three categories. Adult children younger than 45 were assigned to the first category, those aged between 45 and 59 were assigned to the second category, and those of 60 years old and older were assigned to the third category.

Another dummy variable was included to capture whether or not the adult child was married. Furthermore, we created three dummy variables for the adult children's education level. Those with a lower secondary education degree or less were coded as being lower educated. Adult children with a higher secondary education or a vocational degree were coded as having an intermediate level of education. Those with a college or a university degree were coded as being higher educated. Dummy variables were also created to capture the adult child's employment status, distinguishing full-time employment, part-time employment and not being employed. A final dummy variable was included to capture whether or not the adult child had children.

Parent characteristics

Our out-selection hypothesis supposes that the severity of the parent's care needs mediates the negative association between the availability of beds in residential care settings and the likelihood that a given adult child provides care. To capture the severity of the parent's care needs, we used the number of limitations in performing ADLs and instrumental ADLs (IADLs). In the SHARE questionnaire, respondents were asked about possible difficulties performing six ADLs: (a) dressing, including putting on shoes and socks, (b) walking across a room, (c) bathing or showering, (d) eating, such as cutting up your food, (e) getting in and out of bed, and (f) using the toilet, including getting up or down. In addition, they could report limitations on seven IADLs: (a) using a map to figure out how to get around in a strange place, (b) preparing a hot meal, (c) shopping for groceries, (d) making telephone calls, (e) taking medication, (f) doing work around the house or garden, and (g) managing money, such as paying bills and keeping track of expenses. We performed a logarithmic transformation to adjust for the positively skewed distribution of the total number of ADL/IADL limitations.

Several parent characteristics were included because they are known predictors of intergenerational care (Blomgren *et al.* 2012; Brandt, Haberkern and Szydlik 2009; Haberkern and Szydlik 2010; Ogg and Renaut 2006). We included a dummy variable to distinguish mothers from fathers, as well as measures for the impaired parent's age and number of children. Parent's age was recoded into a categorical variable with three categories. Respondents younger than 65 were assigned to the first category, those aged between 65 and 79 were assigned to the second category and those of 80 and older were assigned to the third category. We included the number of children of the parent in our model, as this may be negatively related to the likelihood of a given adult child stepping in and providing care (Freedman *et al.* 1991; Van Gaalen, Dykstra and Flap 2008). In addition, we included two dummy variables indicating whether the parent received, respectively, formal home care services and professional household help during the last 12 months.

We created three dummy variables for the impaired parent's educational attainment. Those with a lower secondary education degree or less were coded as being lower educated. Respondents reporting having a higher secondary education or a vocational degree were coded as having an intermediate level of education. Those with a college or a university degree were coded as being higher educated. An indicator for poor financial status was derived from the question of whether the respondent's household was 'able to make ends meet'. We created a dummy variable, coding it

1 when difficulty or great difficulty to make ends meet was reported and 0 when the household was able to make ends meet easily or fairly easily. Our analyses only pertain to impaired parents not living with a spouse or partner. We included a dummy variable to distinguish those who were divorced from those who were never married, widowed or living separated from the person they were married to. A final parent-level dummy variable was included to distinguish observations from the second wave from those from the first wave.

Country characteristics

To capture the availability of care beds in residential care settings at the country level, we enriched the SHARE micro-data with a country-level variable indicating the share of the national population of 65 years and older in residential care. This variable was taken from the MULTILINKS database of comparative social policy indicators (Keck and Saraceno 2011).

Method

In our data, parent–child dyads are nested in countries. To account for the non-independence of parent–child dyads within countries when testing our hypotheses, we estimate multi-level logistic regression models. Given that our in-selection and out-selection hypotheses posit that the effect of the availability of beds in residential care settings on the likelihood of intergenerational care provision is mediated, we first estimate a reduced-form model in which the assumed mediators are omitted. We compare the total effect of the availability of beds in residential care settings in this model with the remaining direct effect in a full model that includes the assumed mediators. We use Karlson, Holm and Breen's KHB decomposition method (Kohler, Karlson and Holm 2011) to assess whether the difference, *i.e.* the indirect effect, is significant and, if so, to what extent it can be attributed to each of the assumed mediators. Unlike traditional methods for mediation analysis (*e.g.* Sobel 1982), the KHB method accounts for attenuation bias that can occur when comparing nonlinear models like ours.

Results

Table 1 provides descriptive statistics. One in nine adult children provided care to the parent, whereas one in 12 adult children shared a household with the parent. The average number of ADL/IADL limitations that

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TABLE 1. *Descriptive statistics*

	Range	Mean	SD
Child characteristics:			
Provided care to parent	0/1	0.112	
Shares household with parent	0/1	0.085	
Female	0/1	0.498	
Age:			
Under 45	0/1	0.308	
45–59	0/1	0.506	
60 or older	0/1	0.186	
Married	0/1	0.686	
Education level:			
Low	0/1	0.345	
Intermediate	0/1	0.400	
High	0/1	0.255	
Employment status:			
Not employed	0/1	0.311	
Part-time	0/1	0.058	
Full-time	0/1	0.630	
Has children	0/1	0.759	
Parent characteristics:			
Number of ADL/IADL limitations[1]	1–13	4.415	3.143
Female	0/1	0.806	
Age:			
Under 65	0/1	0.154	
65–79	0/1	0.358	
80 or older	0/1	0.488	
Divorced	0/1	0.150	
Education level:			
Low	0/1	0.747	
Intermediate	0/1	0.170	
High	0/1	0.083	
Poor financial status	0/1	0.527	
Number of children	1–9	2.591	1.491
Receives formal home care	0/1	0.235	
Receives professional household support	0/1	0.332	
Wave 1	0/1	0.427	
Wave 2	0/1	0.573	
Country characteristics:			
% 65+ in residential care	1.0–8.2	5.048	2.113

Notes: N = 1,214. SD: standard deviation. 1. Scores represent values before log-transformation.
Source: Survey of Health, Ageing and Retirement in Europe; MULTILINKS database of social policy indicators.

parents in our sample coped with was 4.4 (on a scale from 0 to 13). The likelihood of care provision and intergenerational co-residence and the average number of ADL/IADL limitations varied markedly across countries, however. As Figure 2 illustrates, care provision and intergenerational co-residence were less likely and the average number of ADL/IADL limitations

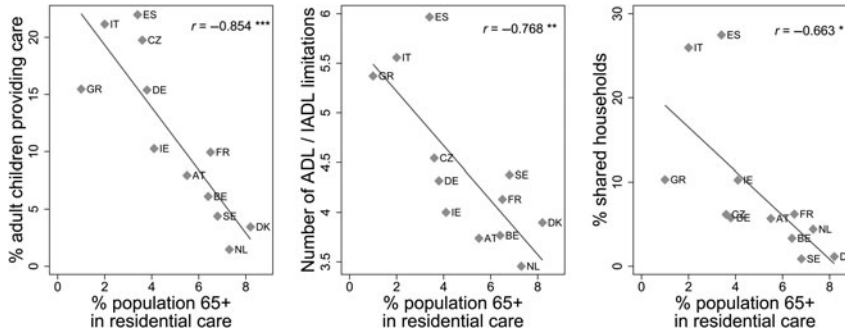

Figure 2. Intergenerational care, co-residence, severity of care needs and residential care.
Notes: ADL: activity of daily living. IADL: instrumental activity of daily living. AT: Austria. BE: Belgium. CZ: Czech Republic. DK: Denmark. FR: France. DE: Germany. GR: Greece. IE: Ireland. IT: Italy. NL: The Netherlands. ES: Spain. SE: Sweden.
Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

was lower in countries where beds in residential care settings were more widely available.

Results of our multi-level logistic regression analyses are presented in Table 2. Model 1 is the reduced-form model that does not include the mediators. We find a strong and statistically significant negative total effect of the availability of beds in residential care settings on the likelihood that an adult child provides care to an impaired parent. Keeping all other variables constant, every percentage point increase in the share of the population aged 65 and upwards living in residential care settings is associated with a 29 per cent ($p < 0.001$) decline in the predicted odds for an adult child to provide care. Model 1 further predicts that the odds of providing care to a parent are a factor 3.414 ($p < 0.001$) higher for daughters than for sons. Adult children with offspring of their own are less likely than their childless counterparts to provide care (odds ratio (OR) = 0.486, $p < 0.01$). Children of parents aged between 65 and 79 (OR = 3.313, $p < 0.05$) and of parents aged 80 or older (OR = 3.762, $p < 0.05$) have higher odds of providing care than children of parents younger than 65. The likelihood that a given child provides care is lower when the parent has a larger number of children (OR = 0.846, $p < 0.05$). The odds of providing care are a factor 1.711 ($p < 0.05$) higher for children of parents receiving formal home care than for children of parents who do not receive home care. None of the other parent and child characteristics included in Model 1 were significantly associated with adult children's provision of care.

The second model is a full model that includes the severity of parents' care needs and intergenerational co-residence. The model fit substantially improved with the addition of these two variables ($\chi^2(2) = 78.0$, $p < 0.001$). The model indicates that children are more likely to provide

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TABLE 2. *Coefficient estimates of multi-level logistic regression models predicting intergenerational care-giving*

	Model 1			Model 2		
Independent variable	*B*	SE	OR	*B*	SE	OR
Fixed part:						
Constant	−1.304	0.787	0.271	−3.878***	0.928	0.021
Child characteristics:						
Female	1.228***	0.227	3.414	1.229***	0.240	3.419
Age (Ref.: Under 45):						
45–59	0.580	0.325	1.785	0.628	0.356	1.873
60 or older	0.597	0.408	1.816	0.552	0.450	1.737
Married	−0.207	0.250	0.813	0.183	0.291	1.200
Education level (Ref.: Low):						
Intermediate	0.111	0.234	1.117	0.391	0.258	1.478
High	−0.545	0.307	0.580	−0.095	0.333	0.909
Employment status (Ref.: Not employed):						
Part-time	0.010	0.426	1.010	0.084	0.459	1.088
Full-time	−0.403	0.234	0.669	−0.361	0.251	0.697
Has children	−0.722**	0.278	0.486	−0.497	0.320	0.609
Shares household with parent				1.965***	0.340	7.132
Parent characteristics:						
Female	0.310	0.286	1.364	0.280	0.303	1.323
Age (Ref.: Under 65):						
65–79	1.198*	0.599	3.313	0.889	0.637	2.433
80 or older	1.325*	0.634	3.762	0.807	0.679	2.241
Divorced	−0.357	0.473	0.700	−0.429	0.499	0.651
Education level (Ref.: Low):						
Intermediate	−0.660	0.359	0.517	−0.495	0.378	0.610
High	−0.883	0.567	0.414	−0.856	0.598	0.425
Poor financial status	−0.360	0.214	0.698	−0.309	0.231	0.734
Number of children	−0.168*	0.073	0.846	−0.167*	0.077	0.846

TABLE 2. (*Cont.*)

Independent variable	Model 1			Model 2		
	B	SE	OR	*B*	SE	OR
Receives formal home care	0.537*	0.254	1.711	0.246	0.274	1.279
Receives professional household support	0.095	0.259	1.099	−0.016	0.277	0.984
Wave 2	−0.480*	0.210	0.619	−0.488*	0.241	0.614
ADL/IADL limitations (log)				1.008***	0.187	2.742
Country characteristics (level 2):						
% 65+ in residential care	−0.344***	0.067	0.709	−0.210**	0.079	0.810
Random part:						
σ level 2 (country)	0.121	0.263		0.246	0.195	
Log-likelihood	−348.4			−309.4		
Degrees of freedom	23			25		
Bayesian Information Criterion	860.1			796.3		

Notes: N = 1,214. Number of countries: 12. OR: odds ratio. Ref.: reference category. ADL: activity of daily living. IADL: instrumental activity of daily living.
Source: Survey of Health, Ageing and Retirement in Europe; MULTILINKS database of social policy indicators.
Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

TABLE 3. *Decomposition of coefficient of availability of beds in residential care settings*

	B	SE	Share of total effect (%)	Share of indirect effect (%)
Reduced-form	−0.344***	0.078	100.0	
Full model	−0.210**	0.079	61.2	
Δ Reduced-form model – Full model	−0.134***	0.023	38.8	100.0
Components of difference:				
ADL/IADL limitations (log)	−0.085***	0.019	24.6	63.2
Intergenerational co-residence	−0.049***	0.012	14.3	36.8

Notes: SE: standard error. ADL: activity of daily living. IADL: instrumental activity of daily living.
Significance levels: ** $p<0.01$, *** $p<0.001$.

care to an impaired parent when the latter's care needs are more severe (OR = 2.742, $p<0.001$). Furthermore, the odds of providing care are a factor 7.132 ($p<0.001$) higher for adult children who share a household with the impaired parent than for children who do not live with the parent. As expected, the effect of the availability of beds in residential care settings is smaller in the full model than in the reduced-form model. In Model 2, every percentage point increase in the share of the population aged 65 and upwards living in residential care settings is only associated with a 19 per cent ($p<0.01$) decline in the predicted odds for an adult child to provide care, when all other variables are kept constant. Furthermore, the coefficient estimates of adult children having offspring of their own and parents' age and receipt of formal home care are smaller than in the reduced-form model and are no longer statistically significant. This suggests that the effects found in the first model can largely be explained by the level of parents' care needs and intergenerational co-residence.

In Table 3, we decomposed the effect of the availability of beds in residential care on the likelihood of intergenerational care provision. Indirect effects make up 39 per cent of the total effect. Of these indirect effects, 63 per cent can be attributed to the natural logarithm of the number of ADL/IADL limitations of older parents ($b=-0.085$, $p<0.001$) and 37 per cent to intergenerational co-residence ($b=-0.049$, $p<0.001$). The former indicates that, consistent with our *out-selection* hypothesis (Hypothesis 1), the lower likelihood of intergenerational care provision in countries where beds in residential care settings are more widely available can partly be explained by the lower severity of care needs of impaired parents in such countries. The latter indicates that the lower likelihood of intergenerational co-residence in countries with widely available residential care also partly explains the lower likelihood of intergenerational care

provision. This is consistent with our *in-selection* hypothesis (Hypothesis 2). Consistent with our *diffusion of responsibility* hypothesis (Hypothesis 3), a significant direct effect of availability of beds in residential care settings remains after the addition of the mediating variables to the model ($b = -0.210$, $p < 0.01$). This direct effect makes up 61 per cent of the total effect.

Discussion

A large body of research is devoted to the way the care that adult children provide to impaired parents is related to formal care services. In the bulk of this work, the focus is on formal home care services. Recent research suggests, however, that the availability of beds in residential care settings also has an impact on intergenerational care-giving. The underlying mechanisms are not well understood. In the current study, we described and tested three explanations for the negative association between the availability of beds in residential care settings and the likelihood that a given adult child provides care to a community-dwelling parent. We labelled these three mechanisms out-selection, in-selection and diffusion of responsibility. We focused on adult children's provision of care to community-dwelling parents lacking a spouse or partner, given the primacy of spousal care over intergenerational care-giving when spouses are present.

Our analyses indicate that adult children are less likely to provide care to impaired community-dwelling unpartnered parents in countries where beds in residential care settings are more widely available, (a) because parents' care needs are less severe in such countries (*out-selection hypothesis*) and (b) because adult children and impaired parents are less likely to share a household in such countries (*in-selection hypothesis*). Finally (c), adult children remain less likely to provide care in countries where beds in residential care settings are more widely available when differences in the severity of the parent's care needs and the prevalence of parent–child co-residence are accounted for (*diffusion of responsibility hypothesis*). Plausibly, being able to rely on residential care undermines adult children's sense of urgency to step in and provide care to their parents.

Our results suggest that widely available beds in residential care settings directly and indirectly undermine the willingness of adult children to provide care to their impaired parents. It should be noted that adult children do not tend to stop providing support to impaired parents when the latter are admitted to residential care settings. Support to parents becomes more secondary after admission, however, and consists mainly of organising, managing and supervising care (Ross, Carswell and Dalziel 2001).

Whether stimulating family care-giving through reduction of beds in residential care settings is desirable depends on one's normative beliefs about how care ought to be provided (*cf.* Greene 1983). Hochschild (1995) argues that residential care is a manifestation of a so-called cold-modern care ideal. In a cold-modern care ideal women and men focus fully on a career in paid labour, with the state enabling this by taking full responsibility for the provision of care for those in need, making family care-giving unnecessary. A recent study focusing on the Netherlands shows that the share of the Dutch population adhering to a cold-modern care ideal has increased, rather than decreased, in the first decade of the 21st century (Van den Broek, Dykstra and Van der Veen 2015). This suggests that, at least in the Netherlands, the stimulation of family care-giving through the reduction of access to residential care may be increasingly at odds with normative beliefs of the general population (*see also* Grootegoed, Duyvendak and Van Barneveld 2015).

Although the key focus of the current study was on the association between the availability of beds in residential care settings and adult children's provision of care to community-dwelling impaired parents, we also included measures for parental receipt of formal home care and professional household services in our model. We did so because countries where beds in residential care settings are widely available also tend to have relatively high shares of older adults receiving formal home care (Saraceno and Keck 2010). Unlike what the substitution thesis and the models of complementarity described in the introduction would lead one to expect, our analyses show neither a negative nor a positive association between parental receipt of formal home care and the likelihood that a given adult child provides care. Possibly, competing mechanisms are cancelling each other out.

It has been argued elsewhere that legal obligations to support parents in need are positively associated with intergenerational care-giving (Haberkern and Szydlik 2010). Thus, the association between the availability of beds in residential care settings and adult children's care provision may be overestimated in our model if countries where adult children are legally obliged to support parents in need also have relatively few beds in residential care settings. For that reason, we also estimated models that included a dummy variable for the presence of legal obligations to support parents in need at the country level. Models that included this indicator instead of or in addition to our indicator for the availability of beds in residential care settings did not fit the data better than the models presented in Table 2, and the presence of legal obligations to support parents was not significantly associated with the likelihood of intergenerational care provision in any of the models.[6] Plausibly, we did not find an effect of legal obligations, because legal obligations generally pertain to

financial support of parents in need rather than to the actual provision of care.

This study has a number of limitations. Our measure of care provided by adult children was based on reports of parents, *i.e.* the recipients. It has to be borne in mind that recipients tend to report receiving less support than providers report giving (Mandemakers and Dykstra 2008). In addition, we have to consider the possibility that the associations between the availability of beds in residential care provision and the likelihood of intergenerational care provision may be confounded by culture. In his paper on family ties in Western Europe, Reher (1998) underlined the importance of cultural differences within Europe, with the south being characterised by 'strong' family links and the north-west by relatively 'weak' family links. He argued that these cultural differences are deeply rooted in the distinct histories of different European regions. In a cross-national study like ours, it is difficult to disentangle the relative impact of the cultural context and of the policy context because they are heavily intertwined (Pfau-Effinger 2005). However, recent longitudinal studies conducted in England (Pickard 2012) and Sweden (Ulmanen and Szebehely 2015) have shown that changes in the availability of residential care in these countries were followed by changes in intergenerational care provision. Given that cultural factors tend to be highly resistant to change (*cf.* Reher 1998), these findings suggest that the effects of the availability of beds in residential care settings on adult children's provision of care to impaired community-dwelling parents as found in this study are largely exogenous.

A contextual factor that we did not take into account in the current study is the design of cash-for-care programmes. Cash-for-care programmes vary greatly across countries on a range of important dimensions, such as entitlement criteria, benefit levels and how the benefits can be used (Da Roit and Le Bihan 2010; Le Bihan and Martin 2012). When the use of cash benefits is limited to the purchase of services under a formal contract or labour relationship, then they may encourage the use of professionally provided care and reduce the necessity of family members to provide care (Saraceno and Keck 2011). When cash benefits can be used freely, they may stimulate the purchase of care services on the informal (often migrant) market, as has been noted in Italy, or they may foster family care-giving, as appears to be the case in Germany and Austria (Rodrigues, Huber and Lamura 2012). The latter is also the likely outcome when the allowance is paid to family care-givers rather than to care recipients (Saraceno and Keck 2011).

Finally, the extent to which residential care is available varies across regions and there are pronounced cross-national differences in the types of care that are offered in residential care settings, organisational structures (public, private non-profit, private for-profit) and the extent to which those

in residential care have to contribute to the costs (Forder and Fernandez 2011; Meijer, Van Campen and Kerkstra 2000; Ribbe *et al.* 1997; Robertson, Gregory and Jabbal 2014; *cf.* Howe, Jones and Tilse 2013). Due to data limitations, we could not take these kinds of differences into account. The analyses presented here show associations between the availability of beds in residential care settings in general and adult children's provision of care to community-dwelling impaired parents. Future research is needed to provide insight into how various aspects of residential care may moderate the mechanisms underlying the negative association between the availability of beds in residential care settings and adult children's provision of care to community-dwelling impaired parents.

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NOTES

1 For more information, *see* http://multilinks-database.wzb.eu.
2 The ADLs about which respondents could report difficulties were (a) dressing, including putting on shoes and socks, (b) walking across a room, (c) bathing or showering, (d) eating, such as cutting up your food, (e) getting in and out of bed, and (f) using the toilet, including getting up or down.
3 The wording of this question was different in Wave 2 for respondents who were also interviewed in Wave 1. These respondents were asked whether they received any kind of support from any family member outside the household, or any friend or neighbour, since the first interview. The period between two interviews is longer than 12 months. Therefore, respondents who were interviewed for the second time may more often report receiving care from a given adult child. We reduce this potential bias through the inclusion in our model of a dummy variable that distinguishes first- and second-wave observations.
4 The wording of this question was different in Wave 2 for respondents who were also interviewed in Wave 1. These respondents were asked whether there was

someone living in their household who had helped them regularly with personal care, such as washing, getting out of bed or dressing, since the first interview. The period between two interviews is longer than 12 months. Therefore, respondents who were interviewed for the second time may more often report receiving care from a given adult child. We reduce this potential bias through the inclusion in our model of a dummy variable that distinguishes first- and second-wave observations.

5 Andersen and Newman's (1973; Andersen 1995) behavioural model of health services' use was initially designed to predict and explain the use of formal health-care services, but it has also been applied to the provision of informal care (*cf.* Broese van Groenou *et al.* 2006; Willis, Glaser and Price 2010).

6 Country-level information on the presence of legal obligations to support parents in need was taken from the MULTILINKS database of comparative social policy indicators (Keck and Saraceno 2011). Bayesian Information Criterion (BIC) scores for the models with a legal obligations dummy instead of the availability of beds in residential care settings indicator were 879.0 (reduced-form model) and 803.5 (full model). BIC scores for the models that included a legal obligations dummy and the availability of beds in residential care settings indicator were 863.7 (reduced-form model) and 800.0 (full model). Full results are available on request.

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