

Sibling Influences, Sibling Similarities, and Parent Care in Late Life*

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Abstract

Researchers have extensively examined why some particular adult children provide care to their aged parents, but rarely considered sibling similarities and influences in their examinations. Guided by social learning theory and diffusion of responsibility theory, we investigate whether sibling similarities are associated with adult children's care hours, net of the parent's and child's characteristics. Based on social comparison theory, we further examine whether such associations differ across adult children, depending on whether adult children share the same characteristics as their siblings. Using Round 5 data from the National Health and

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Aging Trends Study, we find that adult children provide more care hours when siblings are close in age, supporting social learning theory. In contrast, adult children provide fewer care hours in the presence of a greater share of siblings who are unpartnered or close to the parents, supporting diffusion of responsibility theory. Consistent with social comparison theory, social learning is stronger for younger adult children, and diffusion of responsibility is weaker when adult children are unpartnered or close to the parents. Findings from this study highlight the importance for future research of going beyond parent-child dyads and incorporate sibling influences when studying the caregiving behavior of adult children.

Key Words: care hours, caregiving, diffusion of responsibility, social comparison, social learning

The Baby Boom generation, the largest birth cohort in U.S. history, is gradually stepping into old age. By 2030, one in five Americans will be age 65 or older (Ortman, Velkoff, & Hogan, 2014). How to best care for the growing population of older adults is a public concern. Most older adults rely on their spouses for assistance when facing difficulties with the activities of daily living, but adult children often take over caregiving responsibilities when their spouses pass away or become too frail to help (Cantor, 1991). Providing care to parents is a stressful experience for many adult children (Lin, Fee, & Wu, 2012). Ideally, if the responsibilities of caring for parents were to be shared among adult children, caregiving would be less stressful for each child (Tolkacheva, van Groenou, de Boer, & van Tilburg, 2011). In reality, caregiving responsibilities often fall upon one, or a few, adult children within families (Merrill, 1996). Understanding why some adult children provide care for their parents while others do not, therefore, has long piqued the interest of gerontology scholars (Seltzer & Bianchi, 2013).

Scholars often conceptualize caregiving as requiring a decision determined by the parent's needs and adult child's resources rooted in parent-child dyads (Finch & Mason, 1993). In recent years, researchers have called for broadening this view to include other individuals, particularly adult children's siblings, in the examination of caregiving to older adults (Davey & Szinovacz, 2008; Silverstein, Conroy, & Gans, 2008; Tolkacheva, van Groenou, & van Tilburg, 2010). Although a handful of studies have considered siblings' influence on adult children's care hours (Checkovich & Stern, 2002; Wolf, Freedman, & Soldo, 1997), two important questions remain unanswered.

First, prior studies have documented that adult children with certain characteristics are more likely to help their parents compared to their counterparts (e.g., Pillemer & Suitor, 2014; Silverstein, Conroy, Wang, Giarrusso, & Bengtson, 2002). These studies, however, do not consider whether and how adult children's

caregiving behavior is influenced by the presence of siblings who possess these characteristics. Two social psychological theories provide foundations for understanding why the presence of such siblings may influence adult children's caregiving behavior. According to social learning theory, adult children may spend *more* time helping parents because they observe and model their own actions after these siblings' caregiving behaviors. In contrast, diffusion of responsibility theory predicts that adult children will spend *less* time helping parents because they presume that other siblings will help parents, and hence do not feel a need to get involved themselves.

Second, if adult children's caregiving behavior is influenced by the presence of siblings who tend to help their parents, it is also important to consider whether such influences vary depending on whether adult children and their siblings share the same characteristics. Based on social comparison theory, children often use siblings similar to themselves as referents, which may enhance cooperation and communication that strengthen social learning but weaken the diffusion of responsibility.

To fill in these gaps, we use data from the National Health and Aging Trends Study that includes information about every child in the family to examine how siblings may influence adult children's caregiving behavior, and whether sibling influences depend on whether adult children and their siblings share the same characteristics. Our findings advance prior studies by moving beyond parent-child dyads and consider adult children's caregiving behavior in the sibling networks.

I. Background

Age-related disabilities often prevent older adults from performing everyday activities and exert negative impacts on their well-being. Approximately 30% of individuals ages 65 and older have reported at least one difficulty with the activities of daily living

(ADL, personal care such as bathing or eating) or instrumental activities of daily living (IADL, complex activities such as meal preparation or grocery shopping) (Freedman et al., 2013). Difficulties in caring for oneself and performing daily routines are associated with increased levels of depressive symptoms (Lin & Wu, 2011; Yang, 2006). Social scientists of many developed countries have long been concerned about how to sustain or improve older adults' well-being. In the United States, this issue is becoming even more prominent as baby boomers enter old age. The Baby Boom generation, the largest birth cohort in U.S. history, began turning age 65 in 2011, and each day for the next 18 years 10,000 baby boomers will cross this threshold (Werner, 2011). Emerging evidence suggests that baby boomers have a higher rate of disability than their 10-year-older cohorts had at comparable ages (King, Matheson, Chirina, Shankar, & Broman-Fulks, 2013; Martin, Freedman, Schoeni, & Andreski, 2010). The aging of the Baby Boom generation, compounded by their relatively poor health, portends the significance of informal caregiving in the coming decades.

Older adults with disabilities often need informal care to help manage everyday activities and maintain their well-being. It is estimated that approximately 34.2 million Americans provide unpaid care to an adult aged 50 or older (National Alliance for Caregiving and AARP Public Policy Institute, 2015). Without informal caregivers, many frail older adults would have to turn to the government for help, placing an enormous burden on existing social programs. Spouses and adult children are two major sources of informal care for frail older adults. In recent years, the number of adult child caregivers has surpassed the number of spouse caregivers (Wolff & Kasper, 2006), likely reflecting the rise of divorce and the number of never-married individuals in later life (Brown & Lin, 2012; Lin & Brown, 2012).

Although adult children are a primary source of informal care,

not all adult children help their parents in times of need. To understand why some adult children provide care while others do not, prior studies have investigated which parents are more likely to receive help from which adult children (Pillemer & Suitor, 2014; Silverstein et al., 2002). Nevertheless, family is composed of a system of interconnected and interdependent individuals (Cox & Paley, 1997). The decision to become a caregiver hinges not only on the parent's needs and adult child's resources, but is also affected by how likely the adult child's siblings are to provide care. To the best of our knowledge, only a handful of studies have examined explicitly sibling influence on adult children's caregiving behavior, and these studies are limited in their sample size and selection, or conceptualization of sibling influence (Henretta, Soldo, & van Voorhis, 2011; Tolkacheva et al., 2010; Tolkacheva, van Groenou, & van Tilburg, 2014).

In the following, we first review the extant literature on how parent's and child's characteristics relate to adult children's caregiving behavior. Then, we adopt three social psychological theories to conceptualize why siblings may influence adult children's caregiving and why such influences may differ across adult children. Specifically, social learning theory suggests that adult children spend more hours on caregiving when more siblings share the characteristics that are associated with caregiving, whereas diffusion of responsibility theory predicts fewer hours on caregiving. Additionally, social comparison theory suggests that sibling influences may be modified by whether adult children share the same characteristics as their siblings, denoting that social learning and diffusion of responsibility do not have universal influences on adult children.

A. Parent's Characteristics

Adult children usually step in to help their parents when there are unmet needs. Prior studies have reported that parents in certain

demographic groups are more likely to receive support than others. Specifically, mothers are more likely than fathers to receive care from their adult children, presumably because widowhood is more common among women than men and older women tend to face more financial hardship than older men (Lin, Brown, & Hammersmith, 2017). Adult children also provide more help to parents who are older, unmarried, less educated, or less healthy, as these parents have fewer resources to cope with adversities in late life (Henretta et al., 2011; Pezzin, Pollak, & Schone, 2015; Silverstein et al., 2008). Partly because of filial norms and partly because of a lack of resources, parents who are minority group members are more likely to receive care from their children than their white counterparts (Fingerman, VanderDrift, Dotterer, Birditt, & Zarit, 2011; Spitze, Ward, Deane, & Zhuo, 2012; Wong, Kitayama, & Soldo, 1999).

B. Child's Characteristics

Caregiving is a stressful task that requires a significant investment in terms of time and resources from caregivers. Characteristics that adult children acquired at birth (ascribed status) or later in life (acquired status) affect the extent of available time and resources, which in turn influence adult children's participation in caregiving activities. Age and gender are two ascribed statuses examined in prior studies. Studies have demonstrated that older children are more likely than their younger siblings to be the ones to whom their mothers turn first during a crisis, likely because older children have received more parental investments and are perceived as more mature and responsible than their younger siblings (Suitor & Pillemer, 2007). In addition, daughters are more likely than sons to be their parents' caregivers, as women are often socialized into the caregiver role, whereas men are socialized to be providers (Matthews, 2002; Pillemer & Suitor, 2014).

Children also acquire new statuses, via education attainment,

marital status, and parenthood, as they pass through different life stages. These acquired statuses create competing responsibilities that may affect whether adult children take on the caregiver role. Specifically, having more education may result in longer hours or greater responsibilities in the labor force, reducing the likelihood that adult children will become their parents' caregivers (Henretta, Hill, Li, Soldo, & Wolf, 1997). Compared with adult children who do not have spouses or minor children, adult children who do are less likely to provide their parents with care (Henretta et al., 2011; Leopold, Raab, & Engelhardt, 2014; Pezzin et al., 2015) due to competing responsibilities.

Finally, parent-child relationships evolve over time and may determine adult children's propensity to provide care. Parent-child closeness has been shown to be positively related to adult children's caregiving, likely because children who are close to their parents are more aware of their needs than children who are not (Tolkacheva et al., 2010).

C. Sibling Similarities and Sibling Influences

Most of today's older adults have more than one child (Reznik, Shoffner, & Weaver, 2005/2006) equally prescribed by social norms to care for their parents. Therefore, adult children's caregiving behavior cannot be understood in isolation, but needs to be studied in relation to the presence of other children in the family. Adult children's caregiving decision may depend on how likely their siblings are to help their parents. Past studies have documented that certain characteristics of adult children have a higher propensity to help their parents (summarized in the previous section). Social learning theory and diffusion of responsibility theory, which have been used to study human behaviors, provide opposite predictions with respect to how sibling similarities in these characteristics may influence adult children's caregiving behavior.

Social learning theory suggests that siblings often serve as role models in shaping children's behavior (Whiteman, McHale, & Soli,

2011). Daughters, children with few competing obligations, and children with close relationships with their parents are more likely to provide care than their respective counterparts. Children who have more of such siblings tend to be exposed to siblings caring for parents, and thus are expected to imitate their caregiving behavior, which in turn increases the likelihood that adult children will provide care to their parents. This prediction is supported by Tolkacheva and her colleagues' study (2014), in which they found that adult children were *more* likely to provide care in families where siblings were emotionally close to their parents than in families where siblings were not emotionally close to their parents.

By contrast, diffusion of responsibility theory (Darley & Latané, 1968) holds that when there are more bystanders who can potentially assist a person in need, individuals are less likely to step in because they assume that others will do so. In other words, if children have more siblings who are likely to care for their parents, they may be less likely to provide care because they anticipate their siblings will fulfill their parents' needs for care. This prediction is also supported by studies showing that adult children are *less* likely to help parents who have more daughters, more children who are unpartnered, more children who do not have offspring, and more children who are close to the parents (Henretta et al., 2011; Tolkacheva et al., 2010).

Although predictions based on both theories have received some empirical support, these studies are limited in several respects. Tolkacheva et al.'s (2010, 2014) studies, for example, are limited to a small sample in the Netherlands (186 parents). Whether the findings can be replicated in the U.S. context is unknown. Henretta et al.'s (2011) study was restricted to unmarried mothers ages 70 and older. The extent to which the same findings would be applicable to older adults in general is also unclear.

While it is important to examine how adult children's caregiving behavior is influenced by sibling similarities in characteristic that are related to caregiving, it is equally important

to consider whether such influences differ across adult children. Festinger's (1954) social comparison theory contends that individuals are motivated to evaluate themselves in relation to how they measure up against others. In the context of family caregiving, children may use siblings with whom they share same characteristics as referents in deciding their own caregiving behavior, and they are therefore subject to the influence of these siblings.

Siblings who are close in age or of the same gender, marital status, or parenthood status share common life experiences and values that facilitate contact, exchange, and positive interactions (Eriksen & Gerstel, 2002; Voorpostel, van der Lippe, Dykstra, & Flap, 2007). When parents need care, adult children may be more likely to cooperate with similar siblings than with dissimilar siblings to help their parents, and such cooperation may strengthen social learning but weaken the diffusion of responsibilities. To date, only a handful of studies have looked at sibling influences on adult children's caregiving behavior, and none have examined whether sibling influences on adult children's caregiving behavior are modified when adult children and their siblings share the same characteristics.

II. The Present study

Prior studies have extensively examined what characteristics of parents and children are associated with children's caregiving behavior. These studies, however, have rarely examined adult children's caregiving behavior in the presence of siblings who could also provide care to parents. In this study, we address two questions to fill this gap. First, how is the presence of a greater share of siblings who are likely to care for parents associated with the time adult children devote to care? According to social learning theory, we posit that the presence of a greater share of siblings who are likely to care for parents positively relates to adult children's care hours. In contrast, due to the diffusion of responsibility, the presence of a

greater share of siblings who are likely to care for parents negatively relates to adult children's care hours. Second, do sibling influences vary, depending on whether adult children share the same characteristics as their siblings? Social comparison theory suggests that similarities between adult children and their siblings may strengthen social learning but weaken diffusion of responsibility. The findings of this study are expected to advance our current understanding of adult children's caregiving behavior by considering sibling similarities and sibling influences.

III. Method

Data used in the analysis come from Round 5 of the National Health and Aging Trends Study (NHATS). The NHATS consists of a nationally representative sample of persons who were ages 65 and older and enrolled in Medicare as of September 30, 2010. This sample has been interviewed annually since 2011. In 2015 (Round 5), a refresher sample drawn from the Medicare enrollment database as of September 30, 2014 was added to the study to replace those in the youngest age group (ages 65-69) and those who had died or had been lost to follow-up in older age groups (DeMatteis, Freedman, & Kasper, 2016). In this study, we used Round 5 data to better represent the current population of older adults in the United States. The data were collected through in-person interviews. Persons at older ages and non-Hispanic blacks were oversampled.

A total of 8,334 older adults completed the Round 5 interview, yielding a 76% response rate. This study restricted the analytic sample to older adults who lived in the community ($n=7,524$) because older adults residing in a residential-care setting may not rely on adult children for help as much as older adults living in the community. For the purpose of the study, we further excluded 802 childless respondents and 1,118 respondents who had only one biological child (who did not have a sibling), resulting in 5,604 parents and 18,745 biological children. The NHATS contains

detailed information about older adults' demographic characteristics, health status, and each of their children, providing a unique opportunity for researchers to examine whether and how sibling similarities are associated with adult children's care hours.

A. Measures

(A) Care Hours

Older adults were asked whether they had received help with each of 16 activities and, if they did, how each of the caregivers providing help was related to them. These 16 activities include going outside, getting around inside the home, getting out of bed, eating, getting cleaned up, using the toilet, getting dressed, doing laundry, shopping for groceries or personal items, making hot meals, handling bills and banking, handling money matters, keeping track of medications, sitting in on physician visits, helping make decisions about insurance or drug plans, and providing transportation. After older adults enumerated each caregiver, they were asked how many hours in total each caregiver had helped them during the month prior to the interview.

(B) Parent's Characteristics

Older adults' age was measured in years. Gender was coded as mother (=1) or father (=0). Marital status consisted of two categories: partnered (coded 1, reference category) or unpartnered (coded 0). Race and ethnicity were classified as white (reference category), black, Hispanic, and other. Educational attainment was gauged in nine categories. To simplify the analysis, we collapsed these categories into less than high-school education (including no schooling and 1st-12th grade, reference category), high-school graduate, some college (including vocational school, some college education, or an associate's degree), and a bachelor's degree or higher. Self-rated health was scored from 1 to 5 (1=poor, 2=fair,

3=good, 4=very good, 5=excellent). Finally, the number of children per family in this analytic sample ranged from 2 to 14.

(C) Child's Characteristics

Child's age was measured in years. A series of dichotomous variables were created to indicate child's gender (daughter=1, son=0), marital status (unpartnered=1, partnered=0), parenthood status (1 if having no offspring under age 18, and 0 otherwise), and closeness to the parent (1 if respondents talked to the child about important things in life, and 0 otherwise). These characteristics have been shown to be positively correlated with care provision, so they were coded as 1 to indicate such a proclivity. Like parent's education, child's education was also measured in nine categories (1=no schooling completed; 2=1st-8th grade; 3=9th-12th grade; 4=high-school graduate; 5=beyond high school; 6=some college; 7=associate's degree; 8=bachelor's degree; 9=master's, professional, or doctoral degree). We kept the original scale to preserve the precision for the sibling-similarity measures described below.

(D) Sibling Similarities

Following Tolkacheva et al.'s (2014) operationalization, we used two strategies to construct sibling similarities. For continuous measures, we calculated the standard deviation of age and education across siblings in each family and then reversed the values, such that higher values indicate greater similarities in age and education. For dichotomous measures, we modified Tolkacheva et al.'s approach, in which they calculated the proportions of children with the characteristics of interest, subtracted the proportions from 0.5, and then took the absolute values of the differences. We generally followed their approach, except that we opted for using the actual value of the difference rather than the absolute value of the difference to gauge sibling similarities. This modification was made to better preserve the theoretical meaning of sibling similarities. Specifically, sibling-similarity measures range from -0.5 to 0.5,

where 0.5 indicates that all children in the family were daughters, were unpartnered, had no offspring under age 18, and were close to their parents; -0.5 indicates that all children in the family were sons, were partnered, had offspring under age 18, and were not close to their parents; and 0 indicates that the compositions of the child's gender, marital status, parenthood status, and closeness to their parent were equally split in the family (i.e., the least similar). If we had used the absolute values of these differences, families with the values of 0.5 and -0.5 would have been viewed as having the same level of sibling similarity. Yet prior studies have shown that, for example, children in all-daughter families tend to have different caregiving behaviors than children in all-son families (Matthews, 2002).

B. Analytic Strategy

The study comprises two sets of analyses. The first analysis used means or percentages (as appropriate) to describe parent's characteristics, child's characteristics, and sibling similarities. The second analysis comprises a series of tobit regression models to examine the associations of care hours and parent's characteristics, child's characteristics, and sibling similarities. Tobit regression models, instead of OLS regression models, were estimated to take into account that a sizable share of children provided zero hours of care (87%). Altogether, we estimated three tobit regression models. The first model includes only parent's characteristics and child's characteristics, the second model adds sibling similarity measures, and the last model further includes the interactions between child's characteristics and sibling similarity measures. Comparisons across these three models inform our understanding concerning whether, and how, sibling similarities relate to adult children's care hours.

A statistical concern arising from including all children of a family in the analyses is that children from the same family are not independent observations. Statistical methods that do not control for the correlations among observations generally underestimate the

variance of estimated coefficients. To address this issue, we estimated two-level tobit regression models to take clustering (child's characteristics at level 1 and parent's characteristics and sibling similarities at level 2) into consideration. A multiple imputation procedure was used to handle missing cases, such that the missing value for a single variable was imputed as a function of other covariates in the analysis (Acock, 2005). To preserve the randomness of the imputed variables, the study results were based on 10 random, multiple-imputed replicates. All analyses were weighted to adjust for nonresponse and for the oversampling of persons at older ages and non-Hispanic blacks.

IV. Results

A. Parent's and Child's Characteristics and Sibling Similarities

Descriptive statistics for all variables included in the analyses are shown in Table 1. The analytic sample consists of 5,604 parents, whose ages ranged from 65 to 107, with an average of 75. More than one half were mothers (56%). Nearly 60% of older adults were partnered. Eight in ten older adults were white, 8% were black, 8% were Hispanic, and 4% belonged to other races. Approximately 18% of the parents had not obtained a high-school diploma, 28% had received a high-school diploma, 28% had acquired some college education, and 26% had completed a bachelor's degree or higher. These parents, on average, reported that they were in good health (3.3).

Typically, these parents had three children, with a minimum of two children (as required by the study) and a maximum of 14 children, resulting in a total of 18,745 children. These children averaged 48 years old¹ and comprised about an equal number of

¹ Of the 18,745 children, 46 were under age 18 at the time of interview (i.e., age 0-17).

Table 1 Weighted Descriptive Statistics for the Characteristics of the Sample

	Mean or %	SD	Range
Parent's characteristics (N=5,604)			
Age	75.16	7.27	65 to 107
Mother	55.76		
Partnered	59.89		
Racial and ethnic background			
White	79.98		
Black	8.24		
Hispanic	7.77		
Other race	4.00		
Education			
Less than high school	17.72		
High school	27.71		
Some college	28.48		
College or higher	26.09		
Health	3.30	1.08	1 to 5
Number of children	3.12	1.43	2 to 14
Child's characteristics (N=18,745)			
Age	48.03	9.30	0 to 84
Daughter	49.48		
Education	6.03	2.12	1 to 9
Unpartnered	31.51		
Has no child < age 18	59.98		
Closeness to parent	29.71		
Helped parent with ADLs or IADLs last month	13.44		
How many hours last month if helped	45.61	104.86	1 to 727.44
Sibling similarities (N=5,604)			
Age similarity	31.67	2.88	0 to 40.31
Gender similarity (daughter)	-0.01	0.30	-0.5 to 0.5
Education similarity	4.54	0.94	0 to 5.66
Marital status similarity (unpartnered)	-0.19	0.30	-0.5 to 0.5
Parenthood status similarity (has no child < age 18)	0.08	0.35	-0.5 to 0.5
Closeness similarity	-0.18	0.38	-0.5 to 0.5

Source: The National Health and Aging Trends Study.

daughters and sons. In general, these children had received some college education (6.03). Slightly less than one-third of the children were unpartnered. Four out of 10 adult children had no offspring under age 18. Approximately 30% of the children were close to their parents, and 13% had provided help to their parents during the month prior to the interview. Among those who helped, the average number of care hours during the month prior to the interview was about 46.

Aggregating child's characteristics to the family level informs us about the extent to which siblings are similar to each other in the family. For continuous measures, the reversed value of the standard deviation of age across siblings in each family ranged from 0 to 40.31 with an average of 31.67. Likewise, education similarity ranged from 0 to 5.66 with an average of 4.54. For dichotomous measures, gender similarly averaged -0.01, suggesting that families tend to have slightly more sons than daughters, as 0 indicates that 50% of the children in the family are sons and 50% of the children in the family are daughters. By the same logic, more children in the family were partnered (-0.19), having no offspring under age 18 (0.08), and not close to their parents (-0.18).

B. Parent Care Hours

Results from three two-level tobit regression models are shown in Table 2. The first model indicates that most of parent's and child's characteristics were associated with adult children's care hours. Specifically, children spent more hours helping their parents when their parents were older, mothers, unpartnered, minorities, less educated, or had poorer health, reflecting that these parents tended to have greater need for support. In addition, the greater the number of children in the family, the fewer care hours each child provided. More care hours were provided by younger children, daughters, unpartnered children, and children who were close to their parents relative to their respective counterparts, consistent with prior studies

Table 2 Coefficients from Two-level Tobit Regressions of Care Hours on Various Covariates (5,604 Parents, 18,745 Children)

	Model 1	Model 2	Model 3
Child's characteristics			
Age	-1.07**	-1.12**	4.08*
Daughter	40.40***	35.65***	35.54***
Education	-1.66	-1.50	-4.18
Unpartnered	45.27***	53.25***	57.00***
Has no child < age 18	1.18	-5.23	-4.68
Closeness to parent	82.43***	122.29***	131.52***
Sibling similarities			
Age similarity		-0.08	8.58**
Gender similarity (daughter)		3.21	6.78
Education similarity		1.36	-2.31
Marital status similarity (unpartnered)		-27.19**	-44.87***
Parenthood status similarity (has no child < age 18)		17.76	28.98*
Closeness similarity		-83.28***	-114.60***
Age x Age similarity			-0.18**
Daughter x Gender similarity			-6.53
Education x Education similarity			0.59
Unpartnered x Marital status similarity			39.22*
Has no child < age 18 x Parenthood status similarity			-12.96
Closeness to parent x Closeness similarity			46.28*
Parent's characteristics			
Age	5.80***	5.69***	5.99***
Mother	26.62***	29.04***	30.35***
Partnered	-40.16***	-43.46***	-44.61***
Racial and ethnic background			
White (ref)			
Black	19.15**	20.69***	19.61**
Hispanic	19.60*	20.00*	19.06*
Other race	36.60**	38.36**	36.92**

Education			
Less than high school (ref)			
High school	-4.80	-3.99	-3.49
Some college	-18.31**	-15.20*	-15.14*
College or higher	-12.45	-8.99	-10.51
Health	-21.72***	-20.28***	-20.54***
Number of children	-4.82***	-7.11***	-6.57***
Intercept	-523.24***	-544.84***	-817.10***
Residual variance at level 1	14413.07	14211.48	14226.92
Residual variance at level 2	3137.73	2950.77	2822.64

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

Source: The National Health and Aging Trends Study.

showing that children who have more resources or fewer competing obligations spend more time helping their parents.

Six sibling similarity measures were added to the second model to gauge whether and how sibling similarities are related to adult children's care hours in ways independent of parent's and child's characteristics. The same parent's and child's characteristics were found to be significant covariates of care hours as those in the first model. Furthermore, with a one-unit increase in sibling similarities in unpartnered status and closeness to the parents, children were expected to decrease the number of care hours by 27.19 and 83.28, respectively, while holding all other covariate in the model constant. That is, the greater the sibling similarities in unpartnered status and closeness to the parent, the fewer the child's care hours, supporting the diffusion of responsibility hypothesis.

Six additional interaction terms between child's characteristics and sibling similarities were included in the third model to investigate if sibling influences are moderated by whether adult children share the same characteristics as their siblings. As in the first two models, the same parent's and child's characteristics were found to be significant covariates of care hours in the third model. Like the second model, the third model shows that marital status and closeness similarities had negative associations with care hours,

supporting the diffusion of responsibility hypothesis. Differing from the second model, however, the third model reveals that age and parenthood status similarities had a positive association with care hours, in concert with the social learning hypothesis.

Three interaction terms between sibling similarities and child's characteristics in terms of age, unpartnered status, and closeness to parents reached statistical significance in the third model. These interaction terms indicate whether sibling influences are moderated by adult children sharing characteristics with their siblings. The results show that social learning on the basis of age similarity (8.58) decreases as the age of children increases (-0.18). In other words, the social learning effect was stronger for younger children than for older children. In contrast, the diffusion of responsibility that arose from having more siblings who were unpartnered (-44.87) was weaker (i.e., more negative) when children were also unpartnered (39.22). Similarly, the diffusion of responsibility that arose from having more siblings who were close to their parents (-114.60) was weaker when children were also close to their parents (46.28).

V. Discussion

With the aging of the Baby Boom generation, adult children increasingly face the challenge of deciding whether to provide their aging parents with care. To understand why some adult children provide care while others do not, past studies have focused on correlates rooted in parent-child dyads, including parent's and child's characteristics (e.g., Pillemer & Suito, 2014; Silverstein et al., 2002). Only a handful of studies have gone beyond parent-child dyads and examined whether the presence of a greater share of siblings who are likely to be a caregiver may influence adult children's caregiving behavior (Henretta et al., 2011; Tolkacheva et al., 2010). Building upon these new developments and guided by social learning theory (Whiteman et al., 2011) and diffusion of responsibility theory (Darley & Latané, 1968), this study examined

whether sibling similarities are associated with an adult child's caregiving, net of parent's and child's characteristics. Furthermore, using social comparison theory (Festinger, 1954), we conceptualized and tested whether such an association varies by whether adult children share the same characteristics as their siblings.

We found support for both social learning theory and diffusion of responsibility theory, depending on which sibling similarity measure was examined. Consistent with the predication based on social learning theory, adult children provided more care hours when siblings were close in age. Congruent with the prediction based on diffusion of responsibility theory, sibling similarities in unpartnered status and closeness to parents were negatively associated with adult children's care hours, suggesting that adult children may perceive that such siblings are readily available to help parents, and thus they do not need to help as much. The latter findings are consistent with Tolkacheva et al.'s (2010) study.

Moreover, we found that social learning was stronger for younger children than for older children, probably because younger children often look up to their older siblings and model their caregiving behavior. On the contrary, diffusion of responsibility was weaker for adult children who were unpartnered and who were close to their parents, likely because same partnership status and closeness to parents enhance sibling cooperation. Together, these findings indicate that the strength of sibling influence depends on whether adult children share the same characteristics as their siblings.

Some limitations should be kept in mind when interpreting the results. First, although the NHATS provides detailed information on each child's characteristics and caregiving behavior, it does not include all possible confounding covariates, such as employment status, availability of community services for older adults, and parents' religious beliefs (e.g., Pillemer & Suito, 2014; Tolkacheva et al., 2014). Second, this study used cross-sectional data and thus cannot capture changes in parent's characteristics, child's characteristics, and some of the sibling's similarities over time

(Davey & Szinovacz, 2008). Third, we modeled sibling influences by conceptualizing how adult children may respond to potential care provision from siblings with certain characteristics. Potential care provision, however, is not the same as actual care provision. Exactly how siblings' actual caregiving behavior influences or is influenced by the actual caregiving behavior of adult children who share the same characteristics is beyond the scope of this study and needs further investigation. Last, other factors may modify the association between sibling similarities and parent care but are not considered in this study because of data limitations. For example, sibling similarities may have a stronger effect on adult children's caregiving behavior when they maintain a closer relationship than when they are distant (Eriksen & Gerstel, 2002). More research is needed to tap into the quality of sibling relationships.

Despite these limitations, this study makes significant contributions by adopting social learning theory and diffusion of responsibility theory to conceptualize two possible mechanisms of sibling influence. In addition, adult children's care provision is influenced not only by parent's and child's characteristics but also by siblings' characteristics, which resonates with family members' linked lives (Elder, Johnson, & Crosnoe, 2003) and underscores the limitation of examining adult children's caregiving behavior using the parent-child dyadic perspective. Additionally, it is important for future studies to adopt a cross-cultural perspective in the study of sibling influences as the nature of intergenerational relationships often vary across social contexts (Billari & Liefbroer, 2008).

The Baby Boom generation is gradually stepping into old age, and many members of this generation will rely on their adult children for care. This study points to the importance of understanding adult children's caregiving behavior in the presence of their siblings' characteristics. With a better understanding of sibling influence, adult children can be more effectively mobilized to provide care to their parents, thus enhancing parents' well-being as they continue to age.

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手足影響、手足相似性及對年老父母的照顧

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摘 要

對於哪些成年子女會對年邁的父母提供照顧，已經有相當廣泛的研究。不過，這一些研究甚少考量到成年子女的兄弟姊妹及其相似性對提供照顧的影響。我們在統計上控制父母與成年子女的特質之後，分析子女與其手足的相似性對提供年邁父母照顧時數的影響，檢視研究結果是否呼應社會學習理論與責任分攤理論的論述。另外，我們進一步分析，子女與其兄弟姊妹之間共同特質的存在，是否改變了前兩項理論所預期會有的影響，並藉此驗證社會比較理論。我們使用「美國健康與老齡化趨勢調查」的第五波資料做分析，發現手足之間年齡差距較小時，提供的照顧時數較多，合乎社會學習理論所預期。如果手足之中有較高比例是單身或是與年邁父母的關係較為親密的話，則會提供父母較少的照顧時數，符合責任分攤理論的論點。在較年輕的成年子女之中，社會學習理論所預期的影響較強；當成年子女都是單身或是與父母的關係較為親密時，責任分攤理論所預期的影響較弱。因此，研究結果也支持社會比較理論。本研究的發現有重要意涵，在研究成年子女對年邁父母的照顧行為時，

不應該只考慮父母與子女的雙邊關係，還應該考量子女的兄弟姊妹及其相似性對照顧老年父母的影響。

關鍵詞：照顧時數、老年照顧、責任分攤、社會比較理論、社會學習理論