Published in final edited form as:
Res Aging. 2012 March ; 34(2): 197–221. doi:10.1177/0164027511420170.

CROSS-SIBLING EFFECTS IN PARENT-ADULT CHILD EXCHANGES OF SOCIOEMOTIONAL SUPPORT

Glenna Spitze, **Russell Ward**, **Glenn Deane**, and **Yue Zhuo**
Department of Sociology University at Albany, SUNY Albany, NY 12222

Abstract

We use National Survey of Families and Households first wave data and innovative modeling to examine how one parent-adult child pair may affect other pairs**.** Three conceptual models guide our analyses of parents' giving and receiving of socioemotional support, representing enhancement, compensation, and independence. Giving support to one child is related to more giving to others (enhancement), but receiving support from one child is related to less receipt from others (compensation). Cross-sibling interactions do not reveal significant effects of distance of one child on exchanges with others, nor of gender or stepchild status of adult children. Cross-sibling interactions differ by race, suggesting enhancement in receiving support among Blacks and enhancement in giving support among non-Blacks. These analyses demonstrate the value of examining how parent-adult child ties are influenced by each other and by their family context.

Despite recent concern among scholars and the general public about "family decline," modern families continue to exhibit strong intergenerational ties (Bengtson, Biblarz, and Roberts, 2002). These parent-child relationships are central and enduring, reflecting increasing life expectancy and declining stability in nuclear family ties (Hogan, Eggebeen, and Clogg, 1993; Mancini and Blieszner, 1989). They are a source of social integration that affects the well-being of both parties (Umberson, 1992). Exchanges of socioemotional and instrumental support are central to these intergenerational ties. Such support flows in both directions, though assistance patterns change with age in response to changing needs and resources (Bengtson and Harootyan, 1994; Cooney and Uhlenberg, 1992; Logan and Spitze, 1996; Lye, 1996).

Studies of intergenerational relations have generally focused on single parent-adult child dyads or on summary measures of parents' relations with all children, yielding considerable information about individual ties and overall support patterns. However, as Matthews (2002: 7) points out, "families can be broken into pairs or dyads, but it is important to remember that such dyad members usually are part of a larger system in which the other members affect their interaction." Her qualitative work has examined this family context extensively, but only recently has quantitative research begun to examine this context by looking at within-family influences on parent-child relationships (e.g., Suitor and Pillemer, 2007; Tolkacheva et al., 2010).

The research reported here is guided by a view of families as a network of interdependent relationships. It extends prior quantitative work by examining more directly how relations with one adult child may affect relations with other adult children (siblings). We investigate this by using National Survey of Families and Households (NSFH) first wave data and an innovative modeling approach to examine implications of characteristics and relationships

Address all correspondence to: Glenna Spitze, Dept of Sociology, AS 329, University at Albany-SUNY, Albany, NY 12222. gds01@albany.edu , Phone: 518-442-4667. .

of one parent-adult child pair for relations involving other pairs. We focus on socioemotional support, both from adult children to parents and from parents to adult children, because it is the most common and most reciprocal type of intergenerational support (Silverstein and Waite, 1993; Ward, Spitze, and Deane, 2009). It reflects intimacy and emotional closeness that likely underlies other forms of assistance. In the recent literature on within-family influences, routine and reciprocal exchanges have received less attention than has caregiving for frail older parents. Further, although more support is given by parents to adult children, flows from parents to children have received less attention.

Using models that include several key predictors of support (proximity, gender of child, and biological/step-child status) and other relevant controls, we assess (1) how exchanges of socioemotional support with one adult child may affect exchanges with other children; (2) whether key characteristics of that parent and adult child may affect exchanges with the *other* children; and (3) whether these patterns vary by race.

In the following sections we review literature that has used several approaches to investigate within-family influences on intergenerational relationships. We discuss conceptual models that have attempted to capture the structural features of support exchanges, using these to develop our own conceptual framework. We then discuss in more detail the research questions to be addressed using our approach.

Background

The problem of trying to capture family-level dynamics has been acknowledged for decades (e.g. Atkinson, 1989; Townsend, 1968). Matthews' qualitative interview studies have provided in depth information on family dynamics when adult children divide help to older parents (e.g. Matthews, 1995; 2002; Matthews and Heidorn, 1998). However, quantitative empirical research has begun to examine these within-family dynamics only recently, perhaps in part due to the need for appropriate methodologies (Connidis, 2001). Several streams of research have attempted to capture family context and within-family differentiation, including research focusing on structural properties of families such as number of children, studies modeling parental choice among adult children for various types of exchange, and some recent studies examining more directly the influences of parent-child pairs on each other.

Toward models of within-family dynamics

As an early step toward analyzing family-level patterns of help, some studies have included measures of family structure (e.g. number of children and their gender composition) in models predicting help for individual pairs or summary measures of parents' relationships with all children. For example, Eggebeen (1992) reported more support exchange (both giving and receiving) with adult children in larger families; in contrast, Hoyert (1991) found family size unrelated generally to exchanges with children, though size reduced assistance to nearest child. Rossi and Rossi (1990) found that number of children does not affect contact with a particular child. Logan and Spitze (1996) found that parents with more children had less contact with each individual adult child, although having more children increased overall contact in an additive fashion. Mothers have been found to be more likely to differentiate among adult children, supporting some but not all children in larger families than in smaller ones (Suitor et al., 2006). Similarly, Ward et al. (2009) found that having more adult children was associated with increased differentiation across children in terms of both contact and reported quality of relations. Finally, having at least one daughter increased the likelihood that parents received personal and household help (Spitze and Logan, 1990).

Some studies have gone beyond looking at empirical effects of family size to suggest *models* that explain patterns of help. Uhlenberg and Cooney (1990) suggested that larger families might have weaker bonds during childrearing years due to less parental attention to each child, leading to less positive feelings in later years. Alternatively, larger families might be more familistic, with fewer maternal involvements outside the home, leading to more positive feelings in later years. Third, adult children in larger families might share help to parents, leading to less contact between each parent-child pair but more positive feelings overall. Focusing on parental help to children, Aldous and Klein (1991) suggested similar models: their "familism" model implied that parents with more children value family contact and will give as much support to each child as in a smaller family, while their "size constraint" model is similar to the first model above. Lye (1996) noted that parent-adult child exchanges may reflect principles of altruism or exchange, yielding different patterns for family size; altruistic motives may suggest less of a limiting effect of size than would exchange. Logan and Spitze (1996) discussed their results in terms of an additive model (more children involve more parent-child contact and help) and a substitution model (with ceilings on available time, energy, or needed help, children, perhaps especially daughters, may substitute for other children).

Within-family preferences and influences

Some studies have sought to more directly assess patterns of within-family differentiation across multiple siblings. Ongoing research by Pillemer and Suitor has assessed whether and how mothers differentiate among adult children in such areas as giving or receiving emotional support and illness care. They have examined tendencies to favor daughters, as well as the role of a child's health and receipt of past assistance from that child, testing models regarding predictors of mothers' choices of particular children based on principles such as exchange or similarity (e.g. Pillemer and Suitor, 2006; Suitor and Pillemer, 2007; Suitor et al., 2006). They treat the child as the unit of analysis, with a nested design that controls for within-family dependence among cases. In related work, Aldous et al. (1985) found that about half of middle-aged parents named one or more adult children as more "comforting" or as "disappointing." Ward et al. (2009) have also described differentiation in parent reports of quality and contact across multiple adult children.

Other recent studies have analyzed data on parent-child pairs, investigating how family and sibling characteristics are related to children's caregiving to elderly parents. Wolf, Freedman, and Soldo (1997) reported that increased hours by siblings reduced one's own hours of helping, and that providing help to parents was reduced when a particular child had sisters. Tolkacheva et al. (2010), using Dutch data, found that a child's caregiving involvement is positively associated with siblings' "average" caregiving, suggesting sibling solidarity as they "respond to parental needs in concert" (p. 753). A child's caregiving is positively related to competing demands experienced by siblings (e.g., marital and parental status, measured proportionately across siblings) and negatively to availability of sisters.

Silverstein et al. (2008) argue that intergenerational assistance entails negotiation and bargaining, with decisions by children to provide assistance partly based on expectations about the ability and willingness of their siblings to assist. They used a fixed effects approach that relied on within-family differencing to determine which child characteristics predict instrumental support to older mothers. They found daughters, married children, and geographically proximate children more likely to provide support. They also found a complex (nonlinear) relationship between distance and feelings of filial responsibility that was related to sibling variation in support provided.

There have also been suggestions of racial-ethnic differences in these structural patterns across families. Research has yielded mixed findings and overall little evidence that

minority families exchange more help (e.g., Eggebeen, 1992; Hogan et al., 1993; Hoyert, 1991; Silverstein and Waite, 1993). However, Wong, Kitayama, and Soldo (1999) found evidence of unobserved heterogeneity in caregiving hours among Whites and Blacks, but not Hispanics; they attributed this to omitted factors that shape choices and behaviors, as well as a "culture of assistance." Similarly, Suitor, Sechrist, and Pillemer (2007) suggested that limited resources and larger, more demanding Black family networks might yield a greater need to differentiate among adult children. However, "cultural resiliency" and norms of solidarity in Black families may override differentiation; Black and White mothers similarly differentiated among adult children in the provision of instrumental and emotional support.

Most previous research on intergenerational relations reviewed above has focused on individual parent-adult child dyads; only recently have a few quantitative researchers begun to examine within-family influences on these relations. These recent studies have also tended to focus on adult children's caregiving for frail older parents, using conceptual models that presume underlying motivations for caregiving. Our work addresses these limitations by taking a more general view of parent adult-child relations, and also by examining influences of a parent's relations with one child, and of that child's characteristics, on relations with other children. In what follows, we will describe our previous work in these directions, our conceptual models for understanding these effects, and our research aims for the current analysis.

In earlier analyses of multiple parent-adult children within families using data from a local sample, we found that some relationship dimensions between a parent and adult child (visiting and feeling close) were *higher* the more that parent visited and felt close to that child's siblings, others (phoning and children's help to parents) were *lower* the more the parent engaged in a like exchange with the child's siblings (Spitze et al., 1994). In our more recent work, using NSFH first wave data and the methods described below for the current analysis, we have examined how patterns of visiting were correlated across adult children in families. We looked at how a key focal variable, residential proximity, influenced not only that child's visiting but also that of other adult children (Deane, Spitze, Ward, & Yue, 2009). We found a modest but positive within-family correlation for frequency of visiting, even with controls for other predictors: visits with one child were associated with increased visits with other children. We further found that child's distance to parents is strongly and negatively associated with visiting, controlling for characteristics of other adult children. This is consistent with past research, although our controls are not commonly used. We also found that one adult child's distance has a negative association with *other* siblings' frequency of visiting, controlling for other characteristics including their distance from parents. These patterns suggest how parent relations with one adult child may affect relations with other adult children.

Given our own previous experience with modeling these structural relationships, as well as previous attempts by others to develop such models, we see three general types of patterns. Positive, negative, or zero intrafamily correlations for a relationship dimension may each reflect any of a number of processes or emotional qualities. For example, a negative correlation among support to (or support from) multiple children could reflect patterns of favoritism, cooperation in meeting parents' needs, support to or from children with more or fewer resources and needs, and so on. A positive correlation could reflect a familistic culture with much interaction and synergistic encouragement of each other's involvement, or a situation where children feel competitive and try to see/help parents as much as others. Other possibilities could be suggested.

We term these patterns an Enhancement Model, a Compensation Model, and an Independence Model. We use the term "enhancement" not necessarily to reflect a warm or

familistic culture but rather to label a situation in which "more promotes more". Similarly, the term "compensation" may not reflect explicit coordination or an attempt to "make up for" a lack from another source, but simply reflects a situation where "more leads to less" elsewhere, perhaps due to finite needs or resources. A situation of independence implies less coordination, perhaps a lack of shared family "culture", or fewer constraints. Below we describe what our models would predict in relation to our research questions.

Our Research Plan and Questions

In the current research, we use empirical models predicting how parent-adult child socioemotional support in both directions may be influenced by support between parents and other adult children as well as characteristics of all adult children in the family. We include three key predictors: parent-child proximity, child gender, and step vs. biological child status. Residential proximity is associated with greater exchange of support, with distance inhibiting assistance (Hogan et al., 1993; Hoyert, 1991; Joseph and Hallman, 1998; Litwak and Kulis, 1987; Logan and Spitze, 1996; Silverstein et al., 2008). Mothers and daughters are more involved in intergenerational exchange, though fathers and sons may be involved in some kinds of male-typed instrumental help (Cooney and Uhlenberg, 1992; Hogan and Eggebeen, 1995; Silverstein and Bengtson, 1997; Silverstein and Waite, 1993). Research has found less contact and support, more strained relations, and fewer normative obligations between stepparents and adult stepchildren (Aquilino, 2005; Eggeben, 1992; Ganong and Coleman, 2006; Ward and Spitze, 2007; Ward et al., 2009), perhaps leading to less assistance to and from adult stepchildren.

Other characteristics of parents or adult children, of parent-adult child dyads, and of family structure and circumstances may affect patterns of helping, and are included in our analyses as control variables. Research has found that assistance patterns are related to parent gender, socioeconomic status (including education), parent and child marital status, parent household composition, and parent age and health (Cooney and Uhlenberg, 1992; Eggebeen, 1992, 2005; Hogan and Eggebeen, 1995; Hogan et al., 1993; Hoyert, 1991; Kaufman and Uhlenberg, 1998; Silverstein and Bengtson, 1997; Silverstein and Waite, 1993; Uhlenberg and Cooney, 1990).

Our research reported here focuses on three kinds of questions that in combination go beyond those in previous literature, to address how parent-adult child exchanges within a network of such ties may affect each other. Our *first* set of research questions asks how socioemotional support between a parent and one child is related to support exchanges between the parent and other children. Our Enhancement Model suggests that more social support to/from one child is associated with more support to/from other children. Our Compensation Model suggests that more support to/from one child is related to less support to/from another child. Our Independence Model would suggest no correlation among these levels of support.

Second, we ask how key characteristics of parents and adult children (proximity, gender of adult child, or biological-step) may affect support between the parent and *other* children. For example, if a child lives near parents, do other children receive or give less support (compensation), or would this encourage greater involvement by other children (enhancement)? Gender patterns may also reflect influences across pairs in support exchange. If daughters provide more support, will sons (or other daughters) behave differently depending on whether sisters are present (again, either enhancement or compensation)? The presence of stepchildren may also influence patterns of exchanges: the presence of biological children may reduce exchanges with stepchildren (compensation), though the presence of stepchildren may not affect exchanges involving biological children.

Third, based on our discussion above regarding potential racial differences in structural patterns, we ask: Do *influences across* parent-child pairs vary by race? Expectations from past research (e.g., Suitor et al., 2007) might suggest greater differentiation among parent-child pairs in Black families due to limited resources and larger family networks (compensation), while other work (e.g., Silverstein and Waite, 1993) suggests that there may be parallel patterns for Blacks and non-Blacks.

Data and Methods

Sample, Case Selection, and Unit of Analysis

Data are from Wave 1 of the National Survey of Families and Household, collected in 1987-88 (Sweet and Bumpass, 1996). This is a national sample of persons aged 19 and over representing the noninstitutionalized U.S. population. The NSFH includes oversampling of some demographic groups, including Blacks and Hispanic groups, and some household types, such as single-parent families and families with stepchildren. Unweighted data are used in the analyses reported here. We account for NSFH's complex survey design in our statistical analyses via inclusion of the variables defining the sampling design (Korn and Graubard, 1991; Winship and Radbill, 1994; see also discussion about this approach in analyses of NSFH in Johnson and Elliott, 1998). For the analyses reported here we selected parents who had at least one noncoresident adult child (aged 19+). This reduces the number of eligible parents to 4,215. Approximately 79% of these gave valid responses to questions about giving and receiving assistance with adult children.

The data file for our analyses is organized with adult children as the units. The families we thus construct have from one to eight noncoresident adult children. Due to the small number of very large families, children listed ninth and higher were excluded from our analyses. This exclusion does not eliminate any families and loses only 20 cases (i.e. adult children). We retain families with one noncoresident adult child because our statistical analyses are derived from multilevel models that estimate unique coefficients for each child while allowing these coefficients to be correlated across siblings. Following this approach there is no reason to restrict the study sample to families with two or more adult children and potentially bias the estimated coefficients away from the population parameters. In addition, because missing values on our selected independent variables are minimal, we apply casewise deletion. This yields 7,927 observations from the adult children.

Dependent Variables

The NSFH Wave 1 offers unusual depth and variety of measures about parent-child ties. These include questions that detail relations between parents and each of their children, using reports by parent respondents. To assess assistance exchanges between parents and adult children, parent respondents were asked to indicate to/from which of their adult children they gave or received various forms of support **"**on a regular basis**."** We focus on the exchange of socioemotional support as indicated by responses to "listen to problems and provide advice": 64% of parent respondents reported giving and 44% receiving such support with at least one adult child; giving and receiving support are modestly correlated (r = .36). Our analyses estimate the effects of parent, child, and family characteristics on two dichotomous dependent variables: (1) whether a parent gives support to their adult child; and (2) whether a parent receives support from their adult child.

Our focus here is on exchanges with noncoresident children, which has been the primary focus for the research literature on intergenerational exchanges. Approximately one-fourth of the parent respondents in our sample live in the same household with an adult child. Such households most often reflect housing needs of the child (e.g., see Ward and Spitze, 2007),

and relations and exchanges with coresident children likely have a different character than those with noncoresident children; we do not address here exchanges between coresident parents and adult children, though (as noted below) we control for the presence of coresident adult children.

Key Independent Variables

Our research questions highlight several key predictors of socioemotional support: geographic proximity between parent and adult child, gender of adult child, and whether the adult child is a biological or a stepchild. Parent respondents were asked "how many miles away from here" each child lived (recoded to units of 100 miles). Gender of child is coded 1 if female. Biological/adopted is compared to stepchild (1 = biological/adopted).

Control Variables

Control variables in the models include relevant parent/household characteristics and adult child characteristics. Parent/household characteristics include: age (in years), gender (1 = female), marital status (1 = currently married), education (in years) as an indicator of social class, health (self-reported from 1 = very poor to 5 = excellent), and number of adult children. Dummy variables for Black and Hispanic (White the omitted category), defined by parent's race/ethnicity and thus assumed not to vary within families, are included in overall models. To control for the implications of coresidence for patterns of exchange with noncoresident children, we also include a dummy variable indicating whether another adult child coresides with the parent. Characteristics of individual adult children include: marital status (1 = currently married) and parental status (1 = has a child; i.e., grandchild of the parent). Table 1 reports descriptive measures (mean, standard deviation, minimum, and maximum) for our full set of variables. Among parent respondents, the mean age was 60.6, 65% were female, 61% were currently married, 16% were Black, and 5% were Hispanic. Among their adult children, 50% were female, 67% were married, and 90% were biological or adopted children.

The Analytic Structure for Cross-Sibling Interactions

Our research questions are assessed with an innovative modeling approach that derives from the adaptation of multilevel models to dyadic data with indistinguishable members and data from small groups (e.g., Kurdek, 2003; Kurdek et al., 2002; Kenny et al., 2002; Kenny et al., 2006). Conventional multilevel file structures for family data contain one row for each family member with one column for each attribute (e.g., age of the family member who is listed in that row) and a column that identifies each family by incrementing between families while repeatedly assigning the same value to each member within a family. This results in a "long" file structure that allows the within-family (intra-class) correlation to be modeled, estimated, and purged. Our approach is distinguished by being both long and wide.

This unusual file structure begins by expanding the length of the file by a factor that is equal to the largest number of family members. As previously noted, our expansion allows for up to eight noncoresident adult children (children listed ninth and higher were excluded). Thus each family contributes up to eight rows to the data file. Next, the width of the file is expanded. This begins by adding one column for each attribute for each family member. Each family member's actual attribute value is reunited with each family member by multiplying each attribute block by a family identity matrix whose dimensions are $n_j \times n_j$, where n_j is the number of family members. That is, child-specific effects are distinguished by using dummy variables and interaction terms between the dummy variables and relevant covariates. The operation we describe creates a data file structure for nesting parent-child information in families, wherein each child's characteristics can be attached to every other child's record. We refer to these terms as cross-sibling interactions. Cross-sibling

interactions allow us to estimate regression models in which each child has his or her own effect and each child affects each other child.

We use SAS' GLIMMIX procedure to estimate multilevel logistic regression models that treat the dependence between sibling pairs as within-family random effects. We use SAS' "estimate" command as a post-estimation operation to average the child-specific effects and their standard errors, weighting by the number of cases designated in each sibling order **(**SAS Institute, Inc., 2008).

Results

Table 2 presents results of multilevel logistic regressions for whether parents receive socioeomotional support from a particular adult child and whether parents give socioeomotional support to a particular adult child. The models present the estimated odds ratios (ORs) and their 95% confidence intervals for predictors averaged across up to eight children in a given family.

Before turning to our research question regarding interdependence of parent-adult child exchanges, we can highlight several baseline patterns. Greater child distance is negatively related to giving or receiving support; parents are more likely to give support to, and receive support from, daughters (and mothers are more likely to receive support, though not to give it); Black parents are more likely to give and receive support than Non-Black parents; and parents are more likely to give support to, and receive support from, biological/adopted than stepchildren. Also of interest, given our focus on interrelationships among parent-adult child exchanges, is family size (number of adult siblings). Parents with more adult children are less likely to receive support from a particular adult child, and are also less likely to give support to a particular child. Previous research, cited earlier, has interpreted the magnitude of the effect of family size as an indicator of the presence or absence of within-family dependence. Our analytic structure allows us to go further to directly quantify the within-family interdependencies that accompany parent-adult child exchanges.

Quantifying Interrelations among Parent-Child Exchanges

We turn now to our first research question, focusing on interdependence of parent-adult child exchanges. The interaction terms in Models 2 and 4 indicate contrasting patterns for the possible effect of exchange with one child on those with others: receiving socioemotional support from one adult child is related to *less* support from others (consistent with compensation), whereas giving support to one adult child is related to *more* support given to other adult children (consistent with enhancement). We can also compare Model 1 with Model 2 and Model 3 with Model 4 to assess what happens when within-family dependency for giving and receiving support is directly accounted for; for this purpose, the interaction and intercept odds must be interpreted in combination (i.e., the odds are multiplicative). This allows us to quantify the apparent consequence of the compensation dynamic among siblings in providing socioemotional support to their parents; and of the synergy, or enhancement, that may result when parents give support to their children.

By itself, the cross-sibling interaction in Model 2 shows that for each unit increase in support to parent provided by one child, his/her siblings' support is reduced by about 23 percent ([.77 – 1] × 100). The impact of this cross-sibling dynamic can also be seen by comparing the intercept level of socioemotional support to parents in Model 1, an odds of 0.18, versus a baseline level of 0.13 in Model 2, which is given in the product of the intercept and the cross-sibling interaction (= 0.17 × 0.77).

Models 3 and 4 reveal a very different dynamic when parents are giving support to their adult children. When parents are providing the support, the within-family dependence more than doubles the level of support provided by parents, from an intercept odds of 2.23 in Model 3 to a baseline of 5.33 in Model 4. In short, we would dramatically underestimate the probability of a given child receiving parental support if we did not directly incorporate this synergistic dynamic into our model.

Do Key Characteristics of One Child Affect Exchanges with Other Children?

Our second set of research questions addresses whether key characteristics of adult children – proximity, gender, and biological/adopted versus stepchildren – may affect exchanges with other adult children. As above, an interdependency may be directly observed with cross-sibling interaction terms. The cross-sibling interactions for distance, child gender, or biological-stepsibling are not significant for either receiving or giving support_(for parsimony, these models and interaction terms are not shown in the tables). That is, exchanges of socioemotional support between parents and a particular adult child appear to be independent of the location (proximity) of other siblings, or having a sister or a stepsibling.

Do Interrelations among Parent-Child Exchanges Vary by Race?

Our third set of research questions address whether patterns of interdependence in giving and receiving socioemotional support vary by race. Results reported in Table 2 indicate that Black parents are more likely than Non-Black parents to both receive and give support. Our interest here, however, is whether exchanges of support between parents and adult children are structured differently in different racial groups. This was explored with models that correspond to those reported in Table 2 for the sample as a whole: Tables 3 and 4 give these results for parents receiving and giving support, respectively. The first two models in Table 3 (Models 5 and 6) and in Table 4 (Models 9 and 10) report multilevel logistic regressions of receiving and giving socioemotional support separately for Blacks and Non-Blacks. The second pair of models in these tables report tests of cross-sibling interactions for the two groups. Patterns in Tables 3 and 4 for Non-Black parents essentially mirror those for the total sample, whereas most of the parent, family and child characteristics have weaker (and mostly non-significant) coefficients in the Black models.

Turning to the focus of our third set of research questions – racial differences in interdependencies of parent-adult child exchanges – we assessed cross-sibling interactions for the patterns of exchange with one child on exchange with other children. Beginning with receiving support (Models 7 and 8 in Table 3), support from one child is significantly related to receiving support from other children among Black parents (consistent with enhancement) but not among Non-Black parents (indicating independence in sibling behaviors). In Black families, if a parent receives support from any child, the support received from all other children is increased by a factor of almost 8 times once we control for family and child characteristics. In net, the parity in Black parents' receiving versus not receiving support can be traced to the strong within-family dependence among siblings (i.e., the intercept odds is very nearly the inverse of the odds in the cross-sibling interaction): the support that Black parents receive appears to be spread and related across their children. There is no apparent influence of a parent receiving support from any child on other children giving support in Non-Black families.

In contrast, the cross-sibling interaction for parents' giving support (Models 11 and 12 in Table 4) is significant and positive for Non-Blacks, consistent with enhancement, but is not significant for Black parents (signaling independence between siblings). When Non-Black parents give support to one child, they are over 5 times more likely to give support to that

child's siblings (as also seen in the overall sample, Table 2). The odds that Non-Black parents give support is thereby increased substantially (from 2.58 to 6.32) when we directly account for within-family dependence among siblings.

As with the sample as a whole, cross-sibling interactions for distance, child gender, and biological/adopted versus stepchildren are not significant for either racial subsample.

Discussion

The need for more explicit attention to family structure and the network of family relations has long been recognized (Matthews, 2002; Silverstein et al., 2008). This paper has combined data that offer unusual depth of information about parent-adult child relations with an innovative modeling approach to investigate how relations between parents and one of their adult children may affect relations with other adult children (siblings). An earlier related paper focused on visiting patterns and the particular role of parent-adult child proximity (Deane et al., 2009). Here we extend this approach to the exchange of socioemotional support.

We can first note some of the patterns for exchange of support between parents and adult children. Nearly two-thirds of parents reported giving such support to one or more children, and nearly one-half report receiving it. Thus, as in research reviewed earlier, exchanges of socioemotional support are common and reciprocal between parents and adult children (e.g. Lye, 1996; Mancini and Bleiszner, 1989). Studies indicate that parents tend to give more support to their children than they receive until relatively advanced ages (e.g. see, Logan and Spitze, 1996); consistent with this, our analyses indicate that giving socioemotional support declines with age, whereas receiving support increases with age.

Our central question is: How may exchanges of support with one adult child affect exchanges of support with others? More specifically, we focused on three sets of research questions. The first set of questions addressed how parent exchanges with one adult child may affect exchanges with other children, reflected in three possible models representing enhancement (positive association), compensation (negative association), and independence (no association). We explored these within-family dependencies using an innovative modeling approach. Our previous work found positive within-family correlations for visiting (enhancement), and, further, a significant cross-sibling interaction: more frequent visits with one child are associated with more frequent visiting by other children (Deane et al., 2009). Here we also find within-family correlations for socioemotional support, but the nature and consequences of these within-family dependencies are more complex than for visiting. Overall, parents who give support to one child are more likely to give support to other children (enhancement), whereas in contrast receiving support from one child is negatively related to receipt from other children (compensation). Further, we have shown that patterns of support exchange may be distorted and underestimated without adjustments for within-family dependencies among siblings.

As noted in the introductory discussion, our enhancement and compensation models may imply various family processes and motivations, such as favoritism, cooperation, familistic culture, competition, and so on. We cannot directly attribute motivations or feelings to the patterns of association we have described, as others have also noted (Silverstein et al., 2008; Tolkacheva et al., 2010). Nonetheless, we can speculate on what could underlie the empirical patterns. Positive cross-sibling interactions for parents giving socioemotional support (and for visiting, in earlier work) seem consistent with a familism view: involvement with one adult child is associated with, and appears to encourage, involvements with other adult children. On the other hand, a negative cross-sibling interaction for parental

receipt of support could suggest a cooperative arrangement among siblings in giving support, or perhaps greater emotional closeness felt by some siblings than others.

We further explored possible cross-sibling effects in the second set of questions, addressing whether the characteristics of parents and one adult child may affect exchanges with other adult children. Our previous work found that greater distance of one child was related to less visiting by other children (Deane et al., 2009). Here we found that distance of one child was not related to exchanges of support with other children. In addition, cross-sibling interactions were not significant for having a sister or a stepsibling.

The third set of questions investigated whether the cross-sibling interactions vary by race-ethnicity. Contrary to some previous research (e.g., Silverstein and Waite, 1993; Silverstein and Bengtson, 1997), Black parents were more involved in socioemotional support with adult children, both giving and receiving more support. But race-specific analyses indicated more complex patterns to these exchanges. Cross-sibling interactions differed for Black and Non-Black parents, depending on whether one looks at giving or receiving support. Accounting for within-family dependence increases levels of support (enhancement) *given* by Non-Black parents to their adult children. Among Black parents, accounting for positive cross-sibling interaction increases levels of support (enhancement) *received*, as support appears to be spread across children. As suggested by Suitor et al. (2007), although more limited resources in Black families might be expected to generate greater differentiation in support exchanges, family solidarity and cultural norms may yield less differentiation among parent-adult child dyads.

Our other findings for key predictors were largely consistent with past research. Prior research has found proximity to be a significant predictor of parent-adult child exchanges, including visiting (Deane et al. 2009; Logan and Spitze, 1996; Silverstein et al., 2008). Although socioemotional support would seem less dependent on proximity, we find that distance has a strong and negative association with both giving and receiving support. This may partly reflect an association between physical distance and other elements of “closeness” or solidarity in the parent-adult child relationship.

We also found that daughters and mothers, and biological/adopted children, were more involved in exchanges of support. Our results are consistent with previous findings for parent and child gender (e.g. Lye, 1996) and for adult biological vs. stepchildren (e.g. Aquilino, 2005; Ward and Spitze, 2007). In addition, we found that married adult children provide more support to parents, but parents are less likely to be giving such support to them.

We have noted some similarities and differences in the patterns for visiting and for exchange of socioemotional support. Other dimensions of parent-adult child relations may exhibit different patterns. For example, instrumental assistance, which entails constraints of time, energy, or expense, may yield more within-family variation and cross-sibling effects.

Distance may also have different implications for different aspects of parent-adult child relations. Instrumental assistance in general requires proximity or frequent travel, as does in-person visiting (Litwak and Kulis, 1987); distance likely matters less for financial assistance, and, one might think, for socioemotional support, though our research has found that distance affects both visiting and socioemotional support. Indicators of parental and child need or resources, such as health and marital status, exhibited mixed associations with socioemotional support, but these may be more significant for other types of assistance.

There are other limitations to what we have been able to do here. We rely on parent reports of their relations with adult children. Logan and Spitze (1996) found slight differences in

patterns of contact and help based on parents' vs. children's reports, and parents may give somewhat more positive reports than their children (Aquilino, 1999). This may yield somewhat inflated estimates of the prevalence of socioemotional exchanges or of the support given by parents compared to that received from children.

Although our research questions focus on how parent-adult child relations may affect one another across multiple children, these cross-sectional data prevent us from directly assessing causal order or causal effects that may underlie the empirical associations. Further, we cannot see the negotiations and bargaining that may be entailed in the "family affair" referred to by Silverstein et al. (2008). Such processes need more direct attention, perhaps through more qualitative research such as that of Matthews (2002). The role of proximity also needs clarification. Silverstein et al. (2008) have noted that this entails an endogeneity issue, as children may remain or move closer to parents in response to, or in anticipation of, support needs.

The analyses presented here demonstrate the value of considering the family as a network of relations. Parent involvements and exchanges with some children, and the characteristics of those parents and children, appear to affect relations between parents and other adult children. This has been acknowledged in the literature for some time, but data and analytic methods have lagged in allowing a clearer look at such within-family dependencies. We have demonstrated here a modeling approach for analyzing cross-sibling patterns. These conceptual and methodological approaches can be applied to better capture the complexities of family relations.

Acknowledgments

Data in this paper are from the National Survey of Families and Households, funded by grants from the Center for Population Research of the National Institute of Child Health and Human Development (HD21009) and the National Institute on Aging (AD10266). The survey was designed and carried out by James Sweet and Larry Bumpass, Center for Demography and Ecology, University of Wisconsin-Madison. Analyses in this paper were supported by a grant (1 RO3 HD048451-01-A2) from the National Institute of Child Health and Human Development to the University at Albany, Glenna Spitze, Principal Investigator, and Glenn Deane and Russell Ward, Co-Investigators. Support was also provided by a grant to the Center for Social and Demographic Analysis from NICHD (R24 HD044943). We are grateful to Samantha Applin for research assistance. Opinions, findings, and conclusions expressed here are those of the authors and do not necessarily reflect the views of the funding agencies.

REFERENCES

Aldous J, Klaus E, Klein D. The understanding heart: Aging parents and their favorite children. Child Development. 1985; 56:303–316. [PubMed: 3987409]

Aldous J, Klein D. Sentiment and Services: Models of Intergenerational Relationships in Mid-Life. Journal of Marriage and the Family. 1991; 53:595–608.

Atkinson, MP. Conceptualizations of the parent-child relationship: Solidarity, attachment, crescive bonds, and identity salience. In: Mancini, JA., editor. Aging Parents and Adult Children. Lexington Books; Lexington, MA: 1989. p. 81-98.

Aquilino W. Two Views of One Relationship: Comparing Parents' and Young Adult Children's Reports of the Quality of Intergenerational Relations. Journal of Marriage and the Family. 1999; 61:858–870.

Aquilino W. Impact of Family Structure on Parental Attitudes Toward Economic Support of Adult Children Over the Transition to Adulthood. Journal of Family Issues. 2005; 26:143–167.

Bengtson, V.; Harootyan, R. Intergenerational Linkages: Hidden Connections in American Society. Springer; New York: 1994.

Bengtson, V.; Biblarz, T.; Roberts, R. How Families Still Matter: A Longitudinal Study of Youth in Two Generations. Cambridge University Press; NY: 2002.

Connidis, Ingrid. Family Ties and Aging. Sage; Thousand Oaks, CA: 2001.

Cooney T, Uhlenberg P. Support from Parents over the Life Course: The Adult Child's Perspective. Social Forces. 1992; 71:63–84.

Deane, G.; Spitze, G.; Ward, R.; Yue, A. Close to You? How Parent-Adult Child Contact is Influenced by Family Patterns. Paper presented at Annual Meetings of American Sociological Association; 2009.

Eggebeen D. Family Structure and Intergenerational Exchanges. Research on Aging. 1992; 14:427–447.

Eggebeen D. Cohabitation and Exchanges of Support. Social Forces. 2005; 83:1097–1110.

Ganong L, Coleman M. Obligations to Stepparents Acquired in Later Life: Relationship Quality and Acuity of Needs. Journal of Gerontology: Social Sciences. 2006; 61B:S80–S88.

Hogan D, Eggebeen D, Clogg C. The Structure of Intergenerational Exchanges in American Families. American Journal of Sociology. 1993; 98:1428–1458.

Hogan D, Eggebeen D. Sources of Emergency Help and Routine Assistance in Old Age. Social Forces. 1995; 73:917–938.

Hoyert D. Financial and Household Exchanges Between Generations. Research on Aging. 1991; 13:205–225.

Johnson D, Elliott L. Sampling Design Effects: Do They Affect the Analyses of Data from the National Survey of Families and Households? Journal of Marriage and Family. 1998; 60:993–1001.

Joseph A, Hallman B. Over the Hill and Far Away: Distance as a Barrier to the Provision of Assistance to Elderly Relatives. Social Science and Medicine. 1998; 46:631–640. [PubMed: 9522424]

Kaufman G, Uhlenberg P. Effects of Life Course Transitions on the Quality of Relationships between Adult Children and Their Parents. Journal of Marriage and Family. 1998; 60:924–938.

Kenny D, Mannetti L, Pierro A, Livi S, Kashy D. The Statistical Analysis of Data from Small Groups. Journal of Personality and Social Psychology. 2002; 83:126–137. [PubMed: 12088122]

Kenny, D.; Kashy, D.; Cook, W. Dyadic Data Analysis. Guilford Press; New York: 2006.

Korn E, Graubard B. Epidemiologic Studies Utilizing Surveys: Accounting for the Sampling Design. American Journal of Public Health. 1991; 81:1166–1173. [PubMed: 1951829]

Kurdek LA. Methodological Issues in Growth-Curve Analyses with Married Couples. Personal Relationships. 2003; 10:235–266.

Kurdek, LA.; du Thoit, S.; du Thoit, M. [downloaded July 11, 2002] Multilevel Modeling of Repeated Measurements Utilizing Dummy Variables: Examples from Growth-Curve Analysis With Individuals and Spouses From Married Couples. 2002. Unpublished paper available from the Scientific Software International website: http://www.ssicentral.com/other/kurdek.htm

Litwak E, Kulis S. Technology, Proximity, and Measures of Kin Support. Journal of Marriage and the Family. 1987; 49:649–661.

Logan, J.; Spitze, G. Family Ties: Enduring Relations between Parents and Their Grown Children. Temple University Press; Philadelphia: 1996.

Lye, D. Adult Child-Parent Relationships. In: Hagan, J.; Cook, K., editors. Annual Review of Sociology. Vol. Vol. 22. Annual Reviews Inc.; Palo Alto, CA: 1996. p. 79-102.

Mancini J, Blieszner R. Aging Parents and Adult Children: Research Themes in Intergenerational Relations. Journal of Marriage and the Family. 1989; 51:275–290.

Matthews, S. Sisters and Brothers/Daughters and Sons: Meeting the Needs of Old Parents. Unlimited Publishing; Bloomington, IN: 2002.

Matthews S. Gender and the Division of Filial Responsibility between Lone Sisters and Their Brothers. Journals of Gerontology: Social Sciences. 1995; 50B:S312–S320.

Matthews S, Heidorn J. Meeting Filial Responsibilities in Brothers-Only Sibling Groups. Journals of Gerontology: Social Sciences. 1998; 53B:S278–S286.

Pillemer K, Suitor J. Making Choices: A Within-Family Study of Caregiver Selection. The Gerontologist. 2006; 46:439–448. [PubMed: 16920997]

Rossi, A.; Rossi, P. Of Human Bonding: Parent-Child Relations Across the Life Course. Aldine de Gruyter; New York: 1990.

SAS Institute Inc.. SAS/STAT 9.2 User's Guide. SAS Institute Inc.; Cary, NC: 2008.

Silverstein M, Bengtson V. Intergenerational Solidarity and the Structure of Adult Child-Parent Relationships in American Families. American Journal of Sociology. 1997; 103:429–460.

Silverstein, M.; Conroy, S.; Gaus, D. Commitment to Caring: Filial Responsibility and the Allocation of Support by Adult Children. In: Szinovacz, M.; Davey, A., editors. Caregiving Contexts: Cultural, Familial, and Societal Implications. Springer; NY: 2008. p. 71-91.

Silverstein M, Waite L. Are Blacks More Likely than Whites to Receive and Provide Social Support in Middle and Old Age? Yes, No, and Maybe So. Journal of Gerontology: Social Sciences. 1993; 48:S212–222.

Spitze G, Logan J. Sons, Daughters, and Intergenerational Social Support. Journal of Marriage and the Family. 1990; 52:420–30.

Spitze G, Logan J, Deane G, Zerger S. Adult Children's Divorce and Intergenerational Relationships. Journal of Marriage and Family. 1994; 56:279–93.

Suitor J, Pillemer K. Mothers' Favoritism in Later Life: The Role of Children's Birth Order. Research on Aging. 2007; 29:32–55.

Suitor J, Pillemer K, Sechrist J. Within-Family Differences in Mothers' Support to Adult Children. Journal of Gerontology: Social Sciences. 2006; 61B:S10–S17.

Suitor J, Sechrist J, Pillemer K. Within-Family Differences in Mothers' Support to Adult Children in Black and White Families. Research on Aging. 2007; 29:410–435.

Sweet, J.; Bumpass, L. The National Survey of Families and Households. Data description and documentation. Center for Demography and Ecology, University of Wisconsin-Madison; Madison, WI: 1996.

Tolkacheva N, van Groenou M, van Tilburg T. Sibling Influence on Care Given by Children to Older Parents. Research on Aging. 2010; 32:739–759.

Townsend, Peter. The structure of the family. In: Shanas, E.; Townsend, P.; Wederburn, D.; Hilhof, P.; Stenhouwer, J., editors. Old People in Three Industrial Societies. Atherton Press; New York: 1968. p. 132-76.

Uhlenberg P, Cooney T. Family Size and Mother-Child Relations in Later Life. The Gerontologist. 1990; 30:618–625. [PubMed: 2276634]

Umberson D. Relationships between Adult Children and Their Parents: Psychological Consequences for Both Generations. Journal of Marriage and the Family. 1992; 54:664–674.

Ward R, Spitze G. Nestleaving and Coresidence by Young Adult Children: The Role of Family Relations. Research on Aging. 2007; 29:257–277.

Ward R, Spitze G, Deane G. The More the Merrier? Multiple Parent-Adult Child Relations. Journal of Marriage and Family. 2009; 71:161–173.

Winship C, Radbill L. Sampling Weights and Regression Analysis. Sociological Methods & Research. 1994; 23:230–263.

Wolf D, Freedman V, Soldo B. The Division of Family Labor: Care for Elderly Parents. Journal of Gerontology. 1997; 52B(special issue):102–109.

Wong R, Kitayama K, Soldo B. Ethnic Differences in Time Transfers from Adult Children to Elderly Parents: Unobserved Heterogeneity across Families? Research on Aging. 1999; 21:144–175.

Table 1

Means, standard deviations, minimum, and maximum (N=7,927)

	Mean	S.D.	Min	Max
Support Exchanged with Children				
Received from Child	0.445	0.497	0	1
Given to Child	0.640	0.480	0	1
Parental Household Characteristics				
Age	60.625	11.407	30	95
Gender (F = 1)	0.653	0.476	0	1
Black	0.158	0.365	0	1
Hispanic	0.049	0.217	0	1
Currently Married	0.608	0.488	0	1
Health	3.757	0.952	1	5
Education	11.069	3.300	0	20
# Children	4.422	2.295	1	13
Adult Child in HH	0.271	0.444	0	1
Adult Child Characteristics				
Distance from Parent (in 100's of miles)	3.833	8.968	0.01	80
Gender (F = 1)	0.499	0.500	0	1
Biological Child	0.902	0.298	0	1
Currently Married	0.665	0.472	0	1
Has Children	0.697	0.459	0	1

Table 2

Multilevel logistic regression models of parents' exchange of socioemotional support with their adult children

	Parents receive socioemotional support from child				Parents give socioemotional support to child			
	Model 1 Baseline Model		Model 2 Baseline + effect of received support from one child on received support from other children		Model 3 Baseline Model		Model 4 Baseline + effect of support given to one child on support given to each other children	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Parental Household Characteristics								
Age	1.01*	1.01-1.02	1.01*	1.01-1.02	0.98*	0.98-0.99	0.99*	0.98-0.99
Gender (F = 1)	1.7*	1.47-1.95	1.71*	1.48-1.98	1.07	0.92-1.25	1.03	0.91-1.18
Black	1.29*	1.06-1.56	1.29*	1.06-1.57	1.26*	1.02-1.55	1.20*	1.00-1.44
Hispanic	1.12	0.82-1.55	1.13	0.81-1.56	0.98	0.7-1.37	0.99	0.74-1.32
Currently Married	0.79*	0.69-0.91	0.8*	0.69-0.93	1.14	0.98-1.33	1.15*	1.01-1.31
Health	0.94	0.88-1.01	0.96	0.89-1.03	1.01	0.94-1.09	1.00	0.94-1.07
Education	1.01	0.99-1.03	1.01	0.99-1.04	1.06*	1.04-1.09	1.05*	1.03-1.08
# Children	0.91*	0.88-0.94	0.93*	0.9-0.96	0.86*	0.84-0.90	0.89*	0.86-0.91
Adult Child in HH	1.08	0.91-1.27	1.07	0.9-1.27	1.34*	1.11-1.60	1.25*	1.07-1.46
Adult Child Characteristics								
Distance from Parent	0.98*	0.97-0.98	0.98*	0.98-0.99	0.98*	0.98-0.99	0.98*	0.98-0.99
Gender (F = 1)	1.45*	1.34-1.56	1.43*	1.32-1.54	1.28*	1.19-1.37	1.36*	1.25-1.48
Biological Child	2.43*	1.99-2.97	2.32*	1.89-2.85	1.56*	1.31-1.84	1.67*	1.40-2.00
Currently Married	1.21*	1.1-1.32	1.2*	1.09-1.32	0.86*	0.78-0.93	0.83*	0.75-0.92
Has Children	0.99	0.89-1.09	0.99	0.9-1.1	1.13*	1.03-1.24	1.10	0.99-1.23
Cross-Sibling Interactions								
Support from/to one child on support from/to each other child	---	---	0.77*	0.67-0.89	---	---	4.98*	4.32-5.75
constant	0.18*	0.09-0.34	0.17*	0.09-0.33	2.23*	1.13-4.40	1.07	0.59-1.92

* odds ratio (OR) is significant at $p \leq 0.05$, two-tailed test

Table 3

Race-Specific Logistic Regressions of Parent's Received Support

	Model 5 Black Baseline N = 1254; n_i = 471		Model 6 Non-Black Baseline N = 6673; n_i = 2662		Model 7 Black + Cross-Sibling Interaction N= 1254; n_i = 471		Model 8 Non-Black + Cross-Sibling Interaction N = 6673; n_i = 2662	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Parental Household Characteristics								
Age	1.00	0.98-1.02	1.01*	1.01-1.02	1.00	0.99-1.02	1.01*	1.01-1.02
Gender (F = 1)	1.87*	1.30-2.70	1.80*	1.53-2.11	1.45*	1.05-2.01	1.80*	1.53-2.11
Hispanic	----	----	1.19	0.86-1.66	----	----	1.17	0.84-1.63
Currently Married	0.99	0.70-1.40	0.76*	0.65-0.90	0.88	0.64-1.20	0.76*	0.65-0.90
Health	1.03	0.86-1.22	0.92*	0.85-0.99	1.09	0.93-1.28	0.92*	0.85-0.99
Education	0.95	0.91-1.01	1.02	1.00-1.05	0.98	0.93-1.03	1.02	1.00-1.05
# Children	1.00	0.94-1.07	0.87*	0.84-0.91	1.03	0.97-1.11	0.88*	0.84-0.91
Adult Child in HH	0.97	0.67-1.40	1.12	0.92-1.35	0.90	0.64-1.27	1.11	0.91-1.34
Adult Child Characteristics								
Distance from Parent	0.99	0.98-1.00	0.98*	0.97-0.98	0.99	0.97-1.00	0.98*	0.97-0.98
Gender (F = 1)	1.32*	1.10-1.58	1.45*	1.33-1.59	1.30*	1.02-1.66	1.46*	1.34-1.60
Biological Child	1.33	0.79-2.23	2.52*	2.02-3.14	1.75	0.96-3.19	2.55*	2.04-3.19
Currently Married	1.19	1.00-1.43	1.22*	1.10-1.36	1.08	0.83-1.40	1.23*	1.10-1.37
Has Children	1.06	0.85-1.33	0.94	0.84-1.06	1.26	0.94-1.68	0.94	0.84-1.06
Cross-Sibling Interactions								
Support from one child on support from each other child	----	----	----	----	7.89*	5.15-12.08	0.97	0.83-1.13
constant	0.62	0.14-2.80	0.17*	0.08-0.35	0.13*	0.03-0.56	0.17*	0.08-0.36

* odds ratio (OR) is significant at $p \leq 0.05$, two-tailed test

Table 4

Race-Specific Logistic Regressions of Parent's Support Given to Adult Children

	Model 9 Black Baseline N = 1254; n_i = 470		Model 10 Non-Black Baseline N = 6669; n_i = 2666		Model 11 Black + Cross-Sibling Interaction N=1254; n_i =470		Model 12 Non-Black + Cross-Sibling Interaction N= 6669; n_i =2666	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Parental Household Characteristics								
Age	1.00	0.99-1.01	0.98*	0.97-0.99	0.99	0.97-1.01	0.98*	0.98-0.99
Gender (F = 1)	1.32	0.97-1.81	1.06	0.90-1.25	1.31	0.87-1.96	1.02	0.88-1.17
Hispanic	----	----	1.02	0.73-1.44	----	----	1.03	0.77-1.39
Currently Married	1.34*	1.03-1.75	1.08	0.91-1.27	1.52*	1.03-2.26	1.10	0.95-1.27
Health	1.10	0.97-1.25	0.98	0.90-1.07	1.16	0.96-1.41	0.97	0.90-1.05
Education	0.99	0.95-1.03	1.08*	1.05-1.11	0.99	0.93-1.04	1.07*	1.05-1.10
# Children	0.92*	0.87-0.96	0.85*	0.82-0.88	0.92*	0.86-0.99	0.88*	0.85-0.91
Adult Child in HH	1.05	0.80-1.38	1.39*	1.13-1.70	0.94	0.62-1.43	1.30*	1.09-1.55
Adult Child Characteristics								
Distance from Parent	0.99*	0.98-0.99	0.98*	0.98-0.99	0.99*	0.98-0.99	0.98*	0.97-0.98
Gender (F = 1)	1.13	0.96-1.33	1.30*	1.20-1.41	1.11	0.93-1.33	1.39*	1.27-1.53
Biological Child	1.22	0.82-1.82	1.62*	1.35-1.94	1.42	0.83-2.41	1.74*	1.44-2.11
Currently Married	0.87	0.73-1.03	0.82*	0.75-0.91	0.91	0.75-1.12	0.80*	0.71-0.90
Has Children	1.31*	1.07-1.61	1.12*	1.00-1.24	1.31*	1.04-1.63	1.08	0.96-1.22
Cross-Sibling Interactions								
Support to one child on support to each other child	----	----	----	----	1.06	0.74-1.51	5.10*	4.36-5.98
constant	1.37	0.44-4.32	2.58*	1.23-5.43	1.44	0.27-7.80	1.24	0.64-2.37

* odds ratio (OR) is significant at $p \leq 0.05$, two-tailed test