Why do families differ from each other? Multi-generational transfers and parent care

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Abstract

Intergenerational transfers occur within a family context, yet most research on the topic focuses on the attributes and behaviors of individuals in the family and not on the family itself with its unique history of multi-generational transfers. Yet, flows of resources across generations within a family may reflect notions of family obligation, expectation, and responsibility that distinguish the transfer behaviors of one family from another. To examine between-family differences in intergenerational transfers across ascending generations, we utilize four waves of data from the AHEAD cohort, a component of the Health and Retirement Study (HRS). We estimate a multilevel model that allows for random within-and between-family effects. The outcome of interest is the help adult children provide their elderly unmarried mothers with activities of daily living (ADL) and instrumental activities of daily living (IADL). We conclude that between-family differences in provision of parent care are largely determined by between-family differences in the elderly mother's characteristics, particularly her health, family structure, and shared family history of intergenerational transfers.

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Introduction

Although the study of intergenerational family transfers has a long tradition in both sociology and economics, prior research has largely focused on developing an understanding of intergenerational transfers *within* the family, examining both the exigencies of potential recipients and the resources of possible donors. Family characteristics, such as size and composition, are often examined in such endeavors but are seldom seen in a broader context of a family culture or family environment that defines each family's variant on the norms of kinship (Seltzer et al. 2005).

In this paper we extend current research on within-family processes to focus on *between*-family differences.[1] There is now a substantial literature on the processes by which a given donor selects a recipient from the pool of possible recipients. Within-family models can accommodate vertical transfers in both directions, for example, downward from a mid-life parent to an adult child (e.g., Rosenzweig and Wolpin 1994), or from a late-life parent to a child or grandchild (McGarry and Schoeni 1997), as well as from parent to young child (e.g., Duncan et al. 1998), and upward transfers from a middle-aged child to a frail parent (e.g., Stern 1995: Henretta et al. 1997; Wolf et al.1997). It is the latter upward transfers, from younger to older generations in a family, which are of interest in this paper.

Dyadic processes play out in the context of a family with its unique structure, family history of helping behaviors among kin in ascending and descending generations, as well as individual attributes of those kin. The overall goal of this paper is to locate intergenerational transfers in the context of the family in order to address how families differ from one another in assisting elderly parents. We consider factors that differentiate between families while allowing for idiosyncratic differences among individuals within the family. We draw on research that explicitly considers the mechanisms that initiate and sustain transfer regimes across generations of kin. "Family culture" is a recognized concept in family therapy and medicine, but here we use the term to refer to the unobserved "glue" that binds and fortifies kin norms, obligations, and expectations of assistance. We also investigate the extent to which family structure and composition are an important source of between-family variation in transfer behaviors.

[1] With few exceptions, prior research models dyadic exchanges within a multigenerational family. Pollack (2007) points out that the vertically extended family of 2-3 generations affords the analyst both specificity and simplicity, assuming that all parties to an allocation decision are observed.

In the next section we review the literature that motivates our focus on between-family differences in transfer behaviors. In the third section we describe our empirical estimation strategy. We use cohort data from the study of Asset and Health Dynamics (AHEAD), a component of the Health and Retirement Study (HRS). AHEAD respondents were first interviewed in 1993 and have been followed biennially since then.[2] In this section we also define the variables we include in a multi-level model of parent care. We use these to estimate both within and between family differences in parent care behaviors. In the fourth section we present our results for all unmarried mothers, largely elderly widows, from the AHEAD cohort and the subset of who are frail.

Differences between families

Why are kin in one family predisposed to assist one another other while another comparable family is not? This is a broad topic that has engaged anthropology, psychology, economics, and sociology. In this paper we focus on how the tendency to assist kin is sustained across generations of a family; we do not, however, consider how or why such behaviors originated.[3]

Intergenerational transfers are of inherent interest in sociology because small group processes and their structures are fundamental building blocks of its research agenda. Sociologists maintain an interest in kin transfers, regardless of their magnitude, direction, or consequences for donor or recipient. Transfers do not simply redistribute resources across generations of a family; they also bolster social bonds between donor and recipient, promote family cohesion, and strengthen intergenerational norms of kin responsibility and obligation. A family history of intergenerational exchanges creates expectations of receiving and providing assistance at various points in the life-cycle for subsequent generations of the family. Transfers need not be directly observed to reinforce bonds among kin. Retelling family stories of help given and help received in the past also may inculcate younger members of a family with distinct family norms and expectations of assistance. Ribar and Wilhelm (2006) treat such patterning as a distinct transmission mechanism as do Jellal and Wolff (2002) who refer to these as "oblique transmissions."

[2] AHEAD cohorts were merged with the original HRS cohort in 1998. Thus the third wave of AHEAD was conducted in 1998, coincident with the fourth round of HRS. Both cohorts, as well as new ones added in 1998 and 2004, have been re-interviewed in even-numbered years since 1998.

[3] Exceptions include economists who consider the group selection in the context of natural selection and evolution (Axelrod 1984; Samuelson 1993; Frank 1994; Field 2001).

Mauss (1954 [1925]) was the first to consider how dyadic exchanges sustain small groups by building bonds of reciprocity, observing that "[presentations of gifts] which are in theory disinterested … are in fact obligatory and interested." Homans elaborates on Mauss' work in his treatise on *Social Exchange* (1974 [1962]). From this perspective all interaction involves exchange of valued goods or services, and group structure and relationships are built from these social interactions. The desire of both donor and recipient to continue their participation in the small group enforces this system of self-interest. Reciprocity within the group reduces uncertainty and lowers transaction costs. Non-reciprocity not only endangers the social bonds of value to the recipient, but also may even invite "altruistic punishment," recently discussed by Fehr and Gachter (2002). Similarly, sociologist Curran (2002) suggests that kin who shrink from intergenerational obligations may face "severe accountability sanctions" from others.

Blau (1964) has argued that social and economic exchanges are similar in many respects although repayment options are often poorly defined in social theory. But as long as exchange is understood to involve only dyadic obligations, social exchange theory is a poor fit to the complexities of transfer systems (Ekah 1974). In their simplest form, dyadic (or restricted) exchanges (A to B; B to A) are of interest to sociologists only to the extent that a delayed *quid pro quo* requires higher levels of trust and stronger social bonds than more immediate reciprocity. Beginning with the work of Levi-Strauss (1969), and continuing with modifications up to the current work of Molm and Cook (1995), Bearman (1997), and Lawler et al.(2000), sociologists have explored the implications and utility of "generalized exchange." Generalized exchange requires a minimum of three participants who engage in two seemingly unilateral exchanges that satisfy the condition of indirect, or serial, reciprocity (A to B; B to C). Note that in this example, generalized exchange consists of two distinct dyadic exchanges either of which could be misinterpreted if not located in a broad family context spanning two or more periods. Bearman (1997) describes intricate chains of generalized exchange found in small, closed populations, but economists Ribar and Wilhelm (2006) describe more realistic exchange systems combining both simple one-way restricted exchanges and generalized exchanges.

Generalized exchange may have special relevance in populations, such as that of contemporary USA, where family structures are primarily vertical, with few lateral extensions, and a large proportion of kin groups contain three or more generations (Wolf 1994). Generalized exchange theory suggests a behavioral strategy for identifying families with strong norms of

intergenerational obligation. Other things, being equal we would expect that families with dense transfer histories in the past would have stronger norms of reciprocity and denser transfers in the present.[4]

In contrast to sociologists, economists have only recently begun to consider the mechanisms that sustain transfer systems within family. Cox et al. (1998) suggest that "loyalty training" *within a family* [emphasis added] need not be assumed to sustain intergenerational transfers. Rather, "other emotions such as guilt or feelings of obligation may dwarf loyalty".[5] Other economists have speculated that donors persist because of the "warm glow," the unobserved psychological reward a donor experiences in assisting others, especially children (Sober and Wilson 1998).

Stark (1995) and Cox (1987) also have suggested that a demonstration or imitation effect – e.g., when children observe parents helping a grandparent – may be an effective mechanism by which children come to value family transfers. In contrast to models of altruism or exchange, the motivation is "setting an example to the youngest generation so that in future years they will replicate the behaviour of their own parents (Wolff 2001). Indeed, Stark (1995:78) goes so far as to argue that "Caring practiced becomes propensity… How caring and concerns for other are forged …is a topic at the very frontier of [family] research." Nonetheless, few economists have taken up Stark's challenge to focus on the mechanisms that sustain caring and ultimately differentiate one family from another.[6]

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[4] Assume, for example, we observe three generations of a family over two time periods. At t_1 an adult child (G2) lives with her mother, a member of the first generation (G1). The G1 parent may incur an obligation to repay her daughter, perhaps with a bequest, or the mother-daughter co-residence may fulfill the daughter's obligation to reciprocate for an earlier transfer. In either case, the G3 grandchild may assume an obligation to assist his/her own G2 parent at t_2. The conditions of generalized exchange also would be satisfied if the child of a G2 sib (say, for example, a G3 niece) observes the help her G2 aunt provided her G1 grandmother, which in turn strengthens the niece's resolve to assist her own mother at some future time. We also allow for transfers from a deceased generation G0, to G1, G2, or G3. Such transfers may take the form of a bequest or resources shared with or given to other generations of kin when they overlapped with G0 at an earlier period. Generalized exchange theory anticipates that families will differ in their collective transfer behaviors because of differences in embedded norms of caring and obligation, what we refer to as "family culture".

[5] Similarly Curran (2002) suggests that kin who shrink from intergenerational obligations may face "severe accountability sanctions" from other kin.

[6] Indeed, prior studies focusing only on within family differences have failed to generate testable hypothesis that can be used to evaluate the popular competing theories of "altruism" and "reciprocity". Economists Stark and Falk (1998:271) note, for example, that "altruism and exchange may be intertwined" because "the attitude of the recipient is endogenous", that is, "[altruism] can arise as a response to actions rather than be orthogonal to them". If, for example, gratitude, rather than obligation, motivates repayment the standard altruism model can give rise to "behavioral patterns that are observationally indistinguishable" from those anticipated by exchange theory (Stark and Falk 1998:275).

While behavior consistent with Stark's demonstration hypothesis also is seemingly consistent with generalized exchange, Stark's hypothesis is that parents of young children are deliberately strategic in modeling behavior they wish to see replicated by their adult children at a future point in time (Cox and Stark 2005). In contrast, generalized exchange does not anticipate such a focused strategic motive. Indeed a G1 donor need not even be consulted as to the G2's selection of a subsequent transfer partner within the family recipient or the nature of the transfer. Generalized exchange anticipates that evidence of the presence and strength of a family culture differentiating among families will be both diffuse in transfer type and dense in cross-generational linkages.

Based on the preceding discussion of generalized exchange, restricted dyadic exchange, and demonstration processes that maintain family transfer systems, we develop the following expectations:

1. A family history of transfers in the past increases the probability of transfers in the current generations. Hence we expect a positive correlation between past G0 ? G1 transfers and current G2 ? G1 transfers (generalized exchange);
2.. In the current generation, previous G1? G2 transfers will increase the probability of a G2? G1 transfer (restricted dyadic exchange);
3. A G2 adult with at least 1 child will be more likely to assist a G1 parent than a G2 child without own children (demonstration effect).

In addition to the processes considered above, there are other likely sources of between-family differences. Family size and composition are aspects of extended families which are the same for all family members at a given time. Other things being equal, a particular child in a large family is less likely than one from a smaller family to either receive help from a parent (McGarry and Schoeni 1995; 1997) or to provide assistance to a parent (Spitz and Logan 1990). On the other hand, larger family size is positively associated with intensity of total parental care provided (Wolf and Soldo 1990; Wolf et al. 1997). But sociologists Steelman and colleagues (2002) have recently called for a more careful consideration of the mechanisms by which family composition confers benefits and disadvantages, beyond the inverse correlation of family size and family resources. Family size and structure may indeed do more than arithmetically adjust the odds of giving or receiving help because children are not interchangeable targets either for attracting parental resources (Behrman et al. 1994) or, later in life, for assisting elderly parents.

Women, for example, are not only far more likely to provide hands-on care for children at any age, but also in mid-life to care for their elderly parents (Soldo et al. 1999). Women are typically seen as more suitable for doing "caring work" perhaps reflecting the relative value of their time in the market place, or the stronger or earlier socialization of women into the role of "kin keepers" as Hagestad (1986) speculates. Alternatively, women's longer life expectancy means that they may be more highly motivated to participate in family exchange networks because they are more likely to be ultimate recipients of help. As a result, family composition – e.g., having a female child in the sibship – measures an important dimension of between-family differences as well as affecting the within-family allocation of care tasks. The low relative fertility found in contemporary US and Europe is likely to increase between-family variation in a number of aspects of family composition.

Race and ethnicity also are important sources of between-family differences and a regular feature of intergenerational transfer models, particularly in US research. Most often these variables function as meta-statistical controls for unobserved structural differences in family size, generational composition, family age distribution, or proximity of kin. Race/ethnicity are assumed to convey the effects of past economic hardships, resulting in low levels of financial resources, and reduced chances of offering or receiving family economic aid. In addition, race and ethnicity also regularly proxy for a host of cultural features that affect family relationships. Early descriptive analyses suggested that intergenerational transfers were more common in minority families than in non-Hispanic white families. But evidence from more recent research is mixed, with results varying by treatment of family size and measures of resources and needs. Estimating separate fixed-effects models of time transfers for white, black, and Hispanic families, Wong et al. (1999a) detect within-family differences only for non-Hispanic white and African American families. In other words, adult children within Hispanic families are more alike one another in terms of their individual propensities to assist elderly parents. Such ethnic differences may convey variations in family size or structure, the social isolation of first and second generation migrant families within Spanish-speaking communities, or the economic hardships common to all new immigrant groups. Alternatively, new migrants, lacking access to economic opportunities and entitlement programs, may transplant or reconstitute family-centered cultures, characterized by strong multi-generational support systems (Balcazar and Qian 2000).

Based on the preceding discussion, we develop the following expectation:

4. Aggregate characteristics of children in a family are associated with between-family differences in transfers (as well as affecting within-family allocation of tasks).
5. US minority groups, particularly Hispanic families, are more likely to provide parent care.

Data and Measures

Data for the analysis are drawn from the Asset and Health Dynamics (AHEAD) cohort, one of five component cohorts in the larger Health and Retirement Study (HRS). Respondents from the AHEAD cohort were born prior to 1924 and were first interviewed in 1993. The AHEAD cohorts were merged in 1998 with the original HRS cohort, born 1931-41.Thus the third wave of AHEAD was conducted in 1998, coincident with the fourth round of HRS. Both cohorts, as well as new ones added in 1998 and 2004, have been re-interviewed in even-numbered years since 1998.

The analysis reported below uses data from the first four waves of observations (1993-94, 1995-96, 1998, and 2000). We use these data to evaluate the effects of family characteristics on whether children in a given family help their unmarried mother with ADL or IADL tasks (i.e., between-family effects) as well as the factors affecting the probability that a specific type of child within a given family provides maternal assistance. Given this focus, the inclusion of data from proxy interviews conducted after a respondent's death is particularly important because functional dependency is most common in the period prior to death. The AHEAD proxy interview data are provided by next-of-kin and describe the period between the respondent's last interview and death. Information is provided on the helper network and the intensity of help each member provides. The analysis presented here is restricted to elderly mothers who were unmarried at their first interview. We limit the analysis to unmarried respondents because spouses, not children, are the primary helpers of the married; and we limit it to women because there are many more unmarried older women than men, and there are likely to be important gender differences in receipt of care.

There are 3088 unmarried women in the AHEAD cohort. Reflecting the relatively high level of childlessness in this cohort, 2547 of them, or only about 82.5 percent, are linked to a living child or stepchild.[7] Children's behavior is observed at each wave. There are 25,402 observations

[7] To determine whether the AHEAD proportion of respondents with a living child or stepchild is reasonable, we used Heuser's cumulative cohort data (Heuser 2005) to estimate the proportion parous in the AHEAD cohort, weighting Heuser's one year cohort estimates by numbers of AHEAD respondents in each one year birth cohort.

on children. After deletion of observations with missing data on variables included in the analysis, there are 25,018 observations, or 98.4 percent of the total. In addition to analyzing the entire set of unmarried mothers, we also estimate between and within family differences for unmarried mothers conditional on their reporting a functional difficulty walking several blocks for a health reason at their initial interview. There are 1147 frail women with children and 11,177 observations on their children.

Outcome Measure

The response variable is a binary indicator of whether each child assists the mother with either activities of daily living (ADL) or instrumental activates of daily living (IADL tasks). This variable may take on different values for each child at each wave. In the 1993 wave of AHEAD, respondents were first asked if anyone helped them in performing six ADL activities (bathing, eating, dressing, toileting, bed transference, and walking across a room). Respondents who reported receiving help "most of the time" were asked "who most often helps." Respondents also were asked if they ever receive help with any of six IADL activities (preparing hot meals, grocery shopping, using a telephone, taking medications, and managing money). Respondents receiving help were asked to identify who most often helps and who else also helps. This wave-one procedure underestimates the involvement of children in ADL care because only the person who "most often helps" is queried. As a result of this procedure, about 20% of those receiving help do not have an identified helper and not all helpers are identified (Henretta et al. 1997). The second, third, and fourth waves of the study obtained information on help provided with ADL and IADL tasks. Respondents indicating that they had difficulty performing any ADL or IADL task were asked to identity all helpers and the total number of hours each helped the respondent over the last month. For each wave, we develop a dichotomous indicator of whether each individual child provided help to his or her mother for these activities. ADL and IADL questions refer to the present time for those respondents who are living and are limited to difficulties expected to last at least three months. In the deceased proxy interview, the questions refer to the three months before death.

This procedure yields an estimate of 82.9 percent with at least one child or step-child in the AHEAD cohort. Proportion nonporous differs from the AHEAD measure of having a living child because some biological children have died and the AHEAD data includes both biological children and stepchildren, though the latter were relatively rare in this cohort. Nonetheless, the Heuser data indicate that the AHEAD estimate of childlessness is reasonable.

Density of Past Family Transfers:

AHEAD includes two indicators of significant intergenerational transfers in previous generations:

a. *financial help from kin*: "Before age 16, was there a time when you or your family received help from relatives because of financial difficulties?" This question was asked in 1998, and there is a missing category for respondents who were not interviewed in 1998;

b. *coresidence with a grandparent*: "Did you ever live in the same household with a grandparent for a year or more before age 17?" This question was asked in 2000, and there is a missing category for non-respondents in 2000.

Whether a family assumes maternal care is substantially affected by attributes of individual children. Because we do not impose any restriction on whether or not a child lives with an elderly mother, all adult children are assumed to be at risk for attending to the needs of their elderly mother.

Child Characteristics

Characteristics of the child included in this analysis are:

a. *child's sex and marital status,* a categorical variable cross-classifying sex and marital status, with female-married as the reference category;

b. a binary indicator for whether the *mother raised a child of this child* for a year or more;

c. an indicator for whether this child is a *stepchild* of the mother;

d. an indicator of whether the child has any *male siblings;*

e. an indicator of whether the child has any *female siblings*.

f. an indicator of whether this *child has children* to measure demonstration motives.

g. an indicator of whether the mother gave this child $5,000 or more in financial help in the ten years preceding 1993.

Mother characteristics

Characteristics of the elderly mother include:

a. *self-rated health* with five categories: excellent (the reference category), very good,good, fair, and poor; there is also a missing category;

b. *age*, coded in five-year categories with ages 75-79 as the reference category;

c. *net worth*, coded in seven categories: negative, zero, $-24,999, $25-49,999; $50-99,999; $100-249,999 (the reference category), and over $250,000;

d. *ethnicity* coded as white non-Hispanic (the reference category), black, Hispanic, and other;

For living respondents, changing characteristics of the elderly mother and the child are measured at the time of the interview. For deceased respondents, these characteristics are measured at the respondent's last living interview.

Model Specification

The emphasis in this paper is on factors that differentiate between families. We embed the standard framework that focuses on dyadic exchanges within this larger focus on family context. The data we analyze re-configures the standard HRS family data into a file that has one line for each observation on a child's provision of help. There are four waves in the analysis, and therefore each child may be observed up to four times and there are typically multiple children within each family. Several of the measures may change from wave to wave. These include: child's provision of help, child's marital status, and presence of living male or female sibs, whether the child has children and mother's health, age, and net worth.

The multiple observations on children and on siblings are not independent, and a multilevel modeling strategy is conceptually appropriate to this data structure because it properly takes account of the clustering created by multiple observations on one child and multiple observations within a family. It also has the conceptual advantage of allowing separate estimation of errors at each level of the analysis. Hence it allows examination of the relative variance within and between families.

The baseline variance components model separates variability in the binary response Y into three levels defined as:

(1) $\pi_{ijk} = P(Y_{ijk} = 1)$ with logit $\pi_{ijk} = B_{jk}$ Eq. 1a

(2) $B_{jk} = \delta_k + u_{jk}$ Eq. 1b

(3) $\delta_k = \phi_0 + v_k$ Eq. 1c

where the subscript *i* refers to repeated observations of each child's provision of help, *j* indexes children in a family, and *k* indexes families. Level one concerns within-child variability, i.e. the probability a child helps, with the random coefficient (B_{jk}) producing a correlation among observations on a child across waves; level two (eq. 1b) concerns child-to-child variability within

a family. The child effect, B_{jk}, equals a family effect (δ_k) plus an error term for each child (u_{jk}). The family effect produces the correlation between children in a family. In the model shown, the within-child correlation and the correlation between children in the same family are assumed to be positive. Level three (eq. 1c) describes variation between families equal to a constant (ϕ_0) plus an error term for each family (v_k). Combining equations 1a-c the full model for the distribution of the binary response Y can be expressed as:

(4) $\text{logit } \pi_{ijk} = \phi_0 + (u_{jk} + v_k)$. Eq. 2

This model provides estimates of the relative variance between children in each family and between families. The model can be elaborated by adding covariates measured at any level.

Estimation results for multilevel models with a binary outcome vary by the estimation method used (Guo and Zhao 2000). The models presented in this paper are maximum likelihood estimates and are estimated using the GLLAMM adaptive quadrature procedure in version nine of Stata (Rabe-Hesketh, Skrondal, and Pickles 2004; 2005). Guo and Zhao (2000) treat maximum likelihood (ML) estimates as the standard of comparison for approximation methods that are computationally more efficient. We have also estimated the same models using the MLwiN (Rasbash et al., 2000) with the option of first-order partial quasi-likelihood (PQL-1) estimation, an approximate method which may yield biased estimates under certain conditions (Rodriguez and Goldman 2001; Guo and Zhao 2000). The PQL-1 procedure, unlike the ML estimates, allows for extra-binomial variation – which is desirable because there is significant underdispersion in our data. In general, our ML estimates of random effects are smaller and fixed effects are larger than our PQL-1 results. ML tends to be more conservative, with fewer significant coefficients particularly in the analysis of frail mothers. Nonetheless, the differences are modest and do not change the overall description of the results or the conclusions.

Our model makes two assumptions about the underlying process. First, it allows no bargaining among children and hence is compatible with an altruistic decision-maker who knows the needs of the elderly parent and the resources of children and assigns helping roles to children which they accept without bargaining. Second, our focus on provision of time help requires us to assume independence of this kind of help from other types such as co-residence or the provision of money.

Results

Table 1 presents frequencies for the variables used in the analysis. The two panels of the Table present data separately for all respondents and the subset of frail respondents (those with difficulty walking several blocks). Within each panel, the first column, labeled "Child-Year" presents frequencies of the multiple observations on children that are used in the analysis. Because the frequencies are affected by the size of families and the number of waves of observation, frequencies for mothers and children (in which each mother or child appears only once) are presented in the second and third columns for variables for which each is applicable.

Among all observations (the left panel), 12.7 percent of the child-year observations are ones in which the child provides help; as expected, among the frail (the right panel), 19.7% of the observations are ones in which the child helps. The observations are distributed across the four waves of the study. Proportionately more children are observed in the first wave; the lower proportion of children in later waves occurs because upon death or study attrition of the mother-respondent, children are no longer observed. The first entry under children's characteristics (the third column of each panel) indicates that slightly over half of children are observed at each of the four waves. The first entry under mother's characteristics (the second column of each panel) shows that the mean number of observations on each mother is slightly less than ten. By this we mean that if a mother of two children is observed in each wave, she would contribute eight observations. The distribution of the child-year observations is generally the same as the frequencies for mothers and children individually. They may differ, however, for several reasons – for example, if a characteristic is associated with a mother's fertility or longevity. The mother's characteristics also may differ because the child-year observations present her characteristics in the year observed while the Mothers column reports her characteristic at the first wave she is observed, usually 1993. For example, there are more 70-74 year olds in the Mothers column than in the Child-Year column because a mother who was 70-74 in 1993 would have fallen in an older age category in subsequent waves.

Multilevel Models for All Mothers

Table 2 presents the multilevel models for all mothers in four panels. The first panel presents a simple model that includes only a set of indicators for the year observed – with 1993 as the reference category. As expected, the probability of a child providing help increases over time as the mother ages. A substantial proportion of the variance in children's provision of help is due to

differences between families. Because models with discrete outcomes do not allow a simple variance proportion calculation, we present at the bottom of the column two indicators of the contribution of between-family differences to observed variance. The first method expresses between-family variance as a proportion of the variance in the logits (i.e., the total of the child level and the family level variance, excluding the variance resulting from the multiple observations on each child). This method indicates that 40 percent of the variance in the logits is attributable to variance between families in this relatively heterogeneous group of unmarried mothers. The second method estimates total variance through use of a threshold model (Snijders and Bosker 1999; Goldstein, Browne, and Rasbash 2002; Rasbash et al. 2000) to estimate level-one variance (the variance resulting from multiple observations on each child).[8] Estimated total variance is the sum of the variance in the logits and the estimated level-one variance. By this approach, 29.5 percent of the total variance is due to the between-family component. The second panel adds mother's characteristics. Adjusting for mother's characteristics – all of which may change over time – substantially reduces the upward slope of the year of observation variable. While there is significant increase between 1993 and later years (perhaps partly because of a change in measurement discussed earlier), the growth curve of child helping is nearly flat after 1995. This finding indicates that the changing characteristics of mothers account for the increasing slope for helping behavior observed in the previous panel. The effects of mother's health and age are strong and monotonic; poorer health and greater age are associated with a higher probability of receiving help. The results for net worth indicate that there are no significant differences for women with net worth over $50,000 but women with lower wealth are more likely to receive help. Inclusion of mothers' characteristics reduces the family level variance to half its value in the previous model and reduces the portion of variance in the logits and the portion of estimated total variance that is attributable to differences between families, to 27 and 18 percent, respectively. Compared to the first model, these variance decompositions represent approximately a one-third decrease in family variance with the inclusion of the

[8] Multilevel models with discrete outcomes do not produce an estimate of level-one variance, and there are multiple ways of estimating this component. The threshold model that we utilize assumes that the observed outcome – providing help to a parent – occurs when an unobserved continuous variable exceeds a threshold. The estimate of level-one variance is the fixed variance of a logistic distribution ($p^2/3 = 3.29$). The advantage of this approach is that variance is expressed on a logistic scale at all three levels and therefore the variance proportion calculation does not depend on the level of the covariates (Snijders and Bosker 1999; Goldstein, Browne, and Rasbash 2002; Rasbash et al. 2000) .

mothers' attributes. Mother's characteristics are an important reason for between-family differences.

Panel three includes both mother's and child's characteristics. The model includes the cross-classification of child's sex by marital status, an indicator for whether the child has female siblings and the interaction of the child's sex and marital status with having female siblings. The main effects for sex and marital status indicate that males – both married and unmarried – are less likely to assist their unmarried mothers than a married daughter. Married and unmarried females are equally likely to help. But, in the presence of a female sibling, a married male is even less likely to help (compared to a married women). When there is a female sibling, an unmarried female is more likely to help than a married female. In other words, in a family with two daughters, one married and one not, the unmarried daughter is more likely to help. Finally, having siblings, particularly sisters, decreases the probability that a given child will provide help.

The effect of a being a step child is substantial and negative. Their odds of giving help are about one-twentieth those of a biological child. Other characteristics of the child – whether the mother raised a child of this child, whether the child has own children, attended college, or received a large financial gift from the parent in the last 10 years – have no effect on the probability of providing help.

Inclusion of child level measures reduces the child level variance by about 12 percent and the family level variance by almost 30 percent. As a result, the family level variance as a percentage of variance in the logits is reduced from 27.4 percent in the previous equation to 23.4 percent in this equation and the proportion of total estimated variance due to between-family differences is reduced from 18.3 to 14.7 percent. Hence an important reason for differences in helping behavior between families is the variation in structure of the family – primarily the distribution of children by sex and marital status and presence of stepchildren.

The last equation adds ethnicity and two measures of the family history of exchanges: whether the mother's family received help from relatives while she was growing up and whether she lived with a grandmother while growing up. Because these two family history measures were gathered in later waves, in 1998 and 2000, there are large numbers of missing observations for respondents who attrited before these wave, usually through death. The estimates for the effects of earlier exchanges are for respondents who have survived and responded to the wave in question. There is a positive association between the mother's report that her family received

financial help when she was growing up and the probability that a child will help her now. Children in families with a history of helping have odds of giving assistance that are 1.7 times those of children in families without such a history. Ethnicity and race have non-significant effects as does the family history measure of co-residing with a grandmother. Because of the inclusion of the indicator for missing status on the history measures (usually indicating death before the 1998 interview with its attendant higher probability of receiving help), it is not appropriate to compare the residual variance in in this model to previous ones.

Multilevel Models for Frail Mothers

Table 3 presents results for parallel models estimated for mothers who were frail at their baseline interview. Frailty is defined as reporting difficulty in walking several blocks. As a result of this limitation, these mothers are much more likely to need and receive help. This characteristic is reflected in the variance analysis in equation one. Seventeen percent of the variance in logits and 12 percent of estimated total variance is family level variance compared to substantially higher levels in the previous table for all women. That is, the frailty limitation decreases the variance in need for help and therefore we observe lower variance from one family to another in whether the mother actually receives help.

The results across equations also reflect this smaller variance. The effects for wave indicate a slower rise in the probability of care provision over time. In equation two, mother's health and net worth are no longer significant – implying that their effects in the previous table results from their association with frailty. Age does remain significant, though its effects are muted compared to the age effect shown in Table 2. The effects of children's characteristics in equation three are similar to those in Table 2; however, unmarried males are equally likely, compared to married females, to provide help and when there are female siblings, both married and unmarried daughters are equally likely to help. In the final equation, the association between family receipt of help when the mother was growing up and the probability a child will help now remains significant.

The results of an analysis of variance by level is similar to Table 2. While a smaller proportion of variance in the logits and total estimated variance is due to family differences, the amount of family variance declines substantially when mother's characteristics and children's characteristics are each added to the model. In equation one, 17 percent of the variance in logits and nearly 12 percent of estimated total variance is family level variance. This proportion is

reduced to 13 percent and 8 percent, respectively, when mother's characteristics are added and seven and four percent when the characteristics of children are added. As in Table 2, mother's characteristics and family structure differences account for a substantial proportion of the variance between families in provision of help.

Probabilities of Providing Help

Table 4 our presents predicted probabilities of providing help for various combinations of individual children's characteristics and the family-level measures of transfer history. The table cross-classifies three combinations of child characteristics in the left-hand column (married male biological child; married female biological child; and married female step child) with three sibling configurations across the columns of the table (no siblings; male sibs only; female sibs only). The table presents predicted probabilities separately by whether the mother's family received financial help before she was age 16 and separately for all mothers and frail mothers. These probabilities are derived from equation four in Tables2 and 3.

Many of the results in this table can be inferred from the equations in the previous tables. Married female biological children are much more likely to provide help than married male biological children; and step children almost never provide help. The usefulness of the predicted probabilities is that they allow us to go beyond these simpler statements to compare more complex categories and to gauge the relative importance of different combinations. The results indicate the extent to which step child status overwhelms the combined effects of a child's sex, marital status, and sibling configuration. For example, compare a married stepdaughter (last row in Table 4) with a frail stepmother and no other siblings to a married male biological child who has female siblings and a frail mother (top two rows). In this comparison, the lowest probability of helping by a biological child is about twice that of the highest probability of helping by a step child. The results also demonstrate the differences in probability of helping the total population of unmarried mothers versus in the subset of frail mothers. These predicted probabilities are derived from separate equations. Across all the panels of the table, predicted probabilities for frail mothers are substantially higher than for all mothers, reflecting the reduced heterogeneity in this latter group.

Table 4 also shows differences in helping by our measure of the family's transfer history in prior generations, i.e, whether the mother's family received financial help from relatives before she attained age 16. A family history of financial transfers increases the probability that a child

will help. A comparison with the effect of child's sex on provision of care provides gives some insight into the relative contribution of family history. In some sibling configurations, such as having no siblings or only male siblings – the effect of family transfer history more than equal to the difference between a male and female married biological son and daughter in the population of all unmarried mothers is almost equal to the offspring sex difference among frail mothers. For example, in the first column of the table a family history of transfers raises the probability that a male child will help a mother by 2.4 percent while the difference between a male and female child in a family without a transfer history is 2.1 percent. The much decreased probability of a male providing help in the presence of female siblings is too great for this effect to overcome.

Discussion

The central results in this paper concern the first expected result, the effects of the family history of exchanges. Across two different specifications, we find that the respondent's report of financial help given to her family while she was growing up increases the likelihood that she will receive ADL or IADL help from her children. These effects are substantial in size compared to the effect of a child's sex. The effect of grandmother coresidence is not significant. To examine the effect of the correlation between the two family history measures, we omitted the early financial help variable from the model. The effect of grandmother coresidence reported earlier changed very little.

Overall, the analysis provides evidence that a dense history of family transfers is associated with the level of current transfers. This interpretation assumes that the measure is a true report of past behavior. Alternatively, reports may reflect selective or false memories influenced by recent or current family events. The conflating of current help receipt reports and the response to these questions should have been minimized by the interview situation. Questions about family history were asked in the early part of the1998 or 2000 interviews well before respondents were asked about current receipt of help.

We find null results for the other two hypothesized processes for maintaining family transfer systems. The indicator of a demonstration motive, having one's own children, is not associated with help to all mothers, and is negatively associated with help to frail mothers. When extensive care is required, the task is allocated to children without children, the opposite of the demonstration expectation. In addition, we find no evidence of restricted dyadic exchange. An elderly mother who has raised one of her children's children or has given a child $5,000 in the

previous ten years before 1993 is no more likely to receive care from that child. Of course, each of these transfers may have already been reciprocated in other ways.

With respect to the remaining expectations, we find that the characteristics of children in a family account for a substantial proportion of between family differences in provision of care. Family composition is likely to be a more important dimension of between-family differences in contemporary cohorts in the USA and Europe because low fertility will increase variance in family composition. That is, smaller families are less likely to include a female child, and step children are likely to be a higher proportion of the children in families in which they are present. Results for race and ethnicity are generally null, a result that is not surprising given recent US research on the topic.

We began by suggesting the importance of examining between-family differences in transfers. Overall our results indicate the usefulness of the approach. First, there is significant between-family variation in provision of care. We find that a substantial proportion of this between-family variation results from the characteristics of the elderly mother, primarily her health, the composition of the set of children available to provide care, and the past history of family transfers. While the first result is not conceptually interesting, the relative size of between-family differences and the importance of family composition and family history in accounting for it suggest the potential of this focus.

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Table One
Frequency Distributions for Child-by-Year Observations, Mothers, and Children

	All Respondents			Frail Respondents		
	Child-Year	Mothers	Children	Child-Year	Mothers	Children
Give help						
no	87.3%			80.6%		
yes	12.7%			19.5%		
Year						
1993	28.2%			29.8%		
1995	27.3%			28.6%		
1998	24.2%			23.7%		
2000	20.4%			17.9%		
Child's characteristics						
Number of times observed						
one			7.7%			7.1%
two			14.8%			18.8%
three			17.7%			21.6%
four			59.8%			52.5%
Sex/marital						
male-married	36.3%		36.5%	36.8%		37.3%
male-unmarried	12.6%		12.4%	11.8%		11.5%
female-married	34.2%		34.3%	33.2%		33.4%
female-umarried	17.0%		16.8%	18.2%		17.8%
Has						
male sibs	73.1%		72.7%	73.4%		72.8%
female sibs	75.0%		74.4%	75.8%		74.8%
Mother raised a child	3.0%		2.9%	3.4%		3.4%
Step relationship	5.2%		5.8%	4.6%		5.2%
Child has children	84.6%		84.3%	86.5%		86.5%
Child received $5000						
no	88.7%		87.1%	90.3%		89.0%
yes	9.0%		8.5%	7.7%		7.1%
missing	2.3%		4.5%	2.1%		3.9%
Child attended college						
no	54.4%		55.0%	60.8%		60.9%
yes	43.4%		42.4%	36.2%		35.5%
missing	2.2%		2.8%	3.0%		3.6%
Mother's characteristics (note a)						
N. times observed (mean)		9.8			9.5	
Health						
excellent	7.5%	9.3%		2.5%	3.0%	
very good	20.8%	22.0%		11.7%	11.9%	
good	29.5%	30.5%		23.4%	24.5%	
fair	25.0%	24.7%		34.0%	35.6%	
poor	17.1%	13.6%		28.5%	25.1%	
Age						
70-74	14.5%	28.9%		11.6%	20.5%	
75-79	28.6%	28.1%		24.1%	26.2%	
80-84	28.3%	24.7%		26.9%	25.8%	
85-89	18.1%	11.5%		21.3%	16.1%	
90 plus	10.5%	6.8%		16.0%	11.4%	

Table One, Continued

	All Respondents			Frail Respondents		
	Child-Year	Mothers	Children	Child-Year	Mothers	Children
Net worth (vs. 100,000-249,999)						
negative	2.2%	2.4%		2.5%	2.8%	
zero	8.8%	8.8%		12.7%	12.4%	
1-24,999	23.4%	23.2%		27.1%	27.4%	
25-49,999	13.0%	12.6%		15.0%	13.6%	
50-99,999	18.7%	20.2%		16.5%	19.5%	
100,000-249,000	21.0%	22.2%		18.1%	17.7%	
250,000 or more (note b)	12.9%	10.7%		8.2%	6.5%	
Family characteristics						
Ethnicity						
white	83.0%	86.1%		79.9%	84.9%	
black	9.9%	8.7%		11.6%	9.5%	
Hispanic	5.8%	4.2%		7.0%	4.6%	
other	1.3%	1.0%		1.5%	1.0%	
R's family received help						
no	73.2%	64.0%		62.9%	53.1%	
yes	6.9%	5.7%		7.3%	5.6%	
missing	20.0%	30.4%		29.9%	41.3%	
R lived with grandmother						
no	56.1%	47.4%		45.4%	36.4%	
yes	11.4%	9.9%		9.4%	7.6%	
missing	32.5%	42.7%		45.2%	56.0%	
N	25018	2486	7640	11177	1124	3515

Notes:

a. For the child-year observations, these variables refer to the year of observation. For mothers, they refer to the first year observed. The first year observed is 1993 for 2422 of the 2486 mothers.

b. Assets increase between 1993 and 1995, probably as the result of a small change in the survey questions (Rohwedder, Haider, and Hurd, 2004). This change probably accounts for the differencebetween mothers when first observed and the entire set of child by year observations.

Table Two
A Multilevel Model for Provision of ADL and IADL Help to All Mothers: Maximum Likelihood Estimates

	ML		ML		ML		ML	
	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)
Year (vs. 1993)								
1995	0.577	0.074 **	0.386	0.075 **	0.426	0.075 **	0.479	0.075 **
1998	1.134	0.078 **	0.503	0.084 **	0.558	0.083 **	0.798	0.084 **
2000	1.405	0.084 **	0.511	0.094 **	0.567	0.093 **	0.984	0.095 **
Child's characteristics								
Sex/marital (vs. female marr.								
male-married					-0.424	0.188 *	-0.479	0.182 **
male-unmarried					-0.695	0.275 *	-0.793	0.269 **
female-umarried					0.121	0.199	0.068	0.196
Has								
male sibs					-0.866	0.098 **	-0.841	0.095 **
female sibs					-1.054	0.157 **	-1.054	0.152 **
Interaction of female sibs with								
male-married					-0.702	0.229 **	-0.646	0.221 **
male-unmarried					-0.179	0.319	-0.045	0.311
female-umarried					0.490	0.234 *	0.477	0.230 *
Mother raised a child					0.247	0.222	0.302	0.218
Step relationship					-2.902	0.326 **	-2.745	0.315 **
Child has children					-0.125	0.120	-0.136	0.118
Child received $5000 (vs. no)								
yes					-0.191	0.177	-0.125	0.170
missing					-0.263	0.258	-0.130	0.251
Child attended college (vs. no)								
yes					-0.049	0.090	-0.035	0.088
missing					-0.362	0.268	-0.468	0.263
Mother's characteristics								
Health (vs. excellent)								
very good			0.093	0.180	0.084	0.178	0.064	0.178
good			0.647	0.175 **	0.668	0.172 **	0.587	0.172 **
fair			1.406	0.177 **	1.414	0.173 **	1.237	0.173 **
poor			1.926	0.182 **	1.965	0.178 **	1.686	0.178 **
Age (vs. 75-79)								
70-74			-0.469	0.126 **	-0.414	0.124 **	-0.418	0.125 **
80-84			0.644	0.092 **	0.586	0.090 **	0.499	0.090 **
85-89			1.327	0.116 **	1.214	0.111 **	0.988	0.110 **
90 plus			1.961	0.146 **	1.786	0.139 **	1.387	0.135 **
Net worth (vs. 100,000-249,999)								
negative			0.467	0.209 *	0.536	0.206 **	0.404	0.205 *
zero			0.320	0.135 *	0.400	0.133 **	0.239	0.133
1-24,999			0.266	0.114 *	0.358	0.112 **	0.226	0.111 *
25-49,999			0.328	0.124 **	0.430	0.122 **	0.334	0.122 **
50-99,999			0.215	0.113	0.249	0.111 *	0.212	0.110
250,000 or more			-0.014	0.142	-0.008	0.140	0.035	0.139
Family characteristics								
Ethnicity (vs. white, non-Hispanic)								
black							0.089	0.128
Hispanic							0.061	0.174
other							0.926	0.411 *
R's family received help (vs. no)								
yes							0.535	0.188 **
missing							0.921	0.135 **

Table Two, continued

	ML		ML		ML		ML	
	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)
R lived with grandmother (vs. no)								
yes							0.101	0.164
missing							1.154	0.130 **
Intercept	-4.338	0.108 **	-5.626	0.214	-3.730	0.270 **	-4.357	0.275 **
family level variance	3.600	0.334 **	1.814	0.215 **	1.298	0.176 **	0.804	0.146 **
child level variance	5.304	0.344 **	4.805	0.303 **	4.250	0.277 **	4.177	0.268 **
family level variance as pct of								
variance in logits	0.404		0.274		0.234		0.161	
estimated total variance	0.295		0.183		0.147		0.097	

* p <=.05
** p <=.01

TableThree

A Multilevel Model for Provision of ADL and IADL Help to Frail Mothers: Maximum Likelihood Estimates

	ML		ML		ML		ML	
	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)
Year (vs. 1993)								
1995	0.333	0.089 **	0.222	0.090 *	0.256	0.091 **	0.291	0.090 **
1998	0.766	0.095 **	0.408	0.102 **	0.446	0.101 **	0.611	0.102 **
2000	0.847	0.105 **	0.329	0.117 **	0.350	0.116 **	0.664	0.119 **
Child's characteristics								
Sex/marital (vs. female marr.								
male-married					-0.526	0.254 *	-0.582	0.247 *
male-unmarried					-0.286	0.390	-0.406	0.382
female-umarried					0.114	0.262	0.123	0.258
Has								
male sibs					-0.886	0.129 **	-0.864	0.125 **
female sibs					-1.077	0.214 **	-1.089	0.209 **
Interaction of female sibs with								
male-married					-0.760	0.304 *	-0.662	0.295 *
male-unmarried					-0.590	0.440	-0.384	0.429
female-unmarried					0.556	0.306	0.543	0.301
Mother raised a child					0.183	0.292	0.202	0.285
Step relationship					-3.196	0.446 **	3.102	0.436 **
Child has children					-0.443	0.158 **	-0.443	0.155 **
Child received $5000 (vs. no)								
yes					-0.069	0.244	-0.038	0.235
missing					-0.306	0.359	-0.150	0.351
Child attended college (vs. no)								
yes					-0.039	0.120	-0.023	0.117
missing					-0.687	0.314 *	-0.734	0.309 *
Mother's characteristics								
Health (vs. excellent)								
very good			-0.500	0.308	-0.448	0.300	-0.442	0.300
good			-0.015	0.296	0.041	0.288	0.039	0.286
fair			0.414	0.294	0.444	0.285	0.406	0.283
poor			0.736	0.296 *	0.791	0.287 **	0.687	0.285 *
Age (vs. 75-79)								
70-74			-0.377	0.158 *	-0.327	0.153 *	-0.304	0.153 *
80-84			0.405	0.119 **	0.388	0.116 **	0.335	0.116 **
85-89			0.877	0.146 **	0.814	0.139 **	0.682	0.138 **
90 plus			1.281	0.175 **	1.189	0.164 **	0.897	0.160 **
Net worth (vs. 100,000-249,999)								
negative			0.059	0.272	0.190	0.266	0.140	0.263
zero			0.098	0.168	0.241	0.164	0.129	0.164
1-24,999			0.140	0.146	0.276	0.143	0.181	0.141
25-49,999			0.238	0.158	0.374	0.155 *	0.285	0.154
50-99,999			0.172	0.150	0.206	0.147	0.187	0.147
250,000 or more			0.034	0.207	0.030	0.202	0.062	0.201
Family characteristics								
Ethnicity (vs. white, non-Hispanic)								
black							-0.067	0.154
Hispanic							-0.096	0.201
other							0.633	0.499
R's family received help (vs. no)								
yes							0.472	0.230 *
missing							0.814	0.154 **

Table Three, Continued

	ML		ML		ML		ML	
	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)	coeff.	(s.e.)
R lived with grandmother (vs. no)								
yes							0.107	0.218
missing							0.730	0.155 **
Intercept	-3.040	0.112 **	-3.728	0.331 **	-1.525	0.397 **	-2.145	0.401
family level variance	1.231	0.242 **	0.812	0.202 **	0.370	0.163 *	0.086	0.143
child level variance	5.886	0.444 **	5.604	0.421 **	4.826	0.379 **	4.696	0.364 **
family level variance as pct of								
variance in logits	0.173		0.127		0.071		0.018	
estimated total variance	0.118		0.084		0.044		0.011	

* p <=.05
** p <=.01

Table Four
Predicted Probabilities of Providing Help to an Unmarried Mother

		Child Has					
	Family Helped While Mother Was Young	No Siblings		Male Sibs Only		Female Sibs Only	
		All Mothers	Frail Mothers	All Mothers	Frail Mothers	All Mothers	Frail Mothers
Married Male Biological Child	No	3.7%	11.3%	1.6%	5.1%	0.7%	2.2%
	Yes	6.1%	16.9%	2.7%	7.9%	1.2%	3.4%
Married Female Biological Child	No	5.8%	18.5%	2.6%	8.8%	2.1%	7.1%
	Yes	9.5%	26.7%	4.3%	13.3%	3.5%	10.9%
Married Female Step Child	No	0.4%	1.0%	0.2%	0.4%	0.1%	0.3%
	Yes	0.7%	1.6%	0.3%	0.7%	0.2%	0.5%

Other variables are fixed to: a 1998 observation; mother did not raise a child of this child; child did not receive a $5000 gift; child did not attend college; mother in "good" health; aged 80-84; net worth $100,000-249,000; white; mother did not live with grandmother