

## Returns on Lifetime Investments in Children in Egypt

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**Abstract** Parental expectations about the companionship and assistance they will receive in later life from their children are key considerations in family formation decisions. We explore patterns of parents' investment and the support and contact they receive from adult children in Egypt, where fertility is falling and sources of support at all life stages are in flux. Using data from a survey of older adults in Ismailia governorate, we consider parents' past investments in childbearing, child survival, and children's education and marriage, as well as recent assistance to adult children via housing, care for grandchildren, gifts, and money. The returns from children considered include economic assistance, instrumental support, and visits. Most parental investments are associated with frequent visits from children. The assistance children provide to parents is gendered: sons tend to provide economic transfers, whereas daughters tend to provide instrumental help. A greater number of surviving children is most strongly associated with parents' receipt of multiple types of later-life returns. Investments in children's education and marriage are not associated with assistance, but recent assistance to children—especially economic transfers and provision of housing—is associated with receiving instrumental assistance from adult children.

**Keywords** Investments · Childbearing · Egypt · Aging · Intergenerational relations

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## Introduction

An influential proposition in demography, stemming from the wealth-flows theory (Caldwell 1976, 2005), is that the desire for security in old age is a central motivation for childbearing. Caldwell (1978:565) stated that in parts of the world, including North Africa, “descendants are the most valuable protection that a couple can have against destitution in old age.” Accordingly, the more children a parent has, the more sources of support he or she can expect to have later in life. The desire for insurance in old age also can motivate investments in child rearing, including as an alternative to higher childbearing (Becker 1981). That is, parents may invest more resources in fewer children expecting that children with more schooling, higher earnings, or higher status will be better able, as adults, to provide support.

Studies from Western and non-Western settings have shown that old-age security is at least one reason for investments in childbearing and child rearing (Bulatao 1981; Fapohunda and Todaro 1988; Lee et al. 1994a). Yet, evidence is limited about whether investments “pay off” for parents and whether some investments in children yield more returns than others. Here, we examine whether older Egyptian parents who have invested more in quantity and quality of children receive more support from children in later life. Egyptian society was historically patriarchal with extensive normative expectations for upward transfers, as envisioned in the wealth-flows theory. Traditionally, expectations of support from children were strong, as were cultural norms about children’s duties to their parents, two conditions that characterize old-age support motives for investments in children (Nugent 1985). Egypt has undergone dramatic structural change in one generation (Moghadam 2004), which wealth-flows theory would predict will precipitate reversals of net support toward children. Today’s generation of older Egyptians, having invested heavily in both quantity and quality of children, may expect and need children’s support, but these expectations may not be fully realized as increases in women’s employment have created competing demands on adult children’s time (Moghadam 2004), labor migration has reduced the availability of children (Wahba 2009), and economic downturns have reduced young people’s earnings (Tabutin and Schoumaker 2005). These changes have occurred in a context in which public infrastructures for old-age assistance have remained weak (Boggatz and Dassen 2005; Gadallah 2002).

This confluence of circumstances makes Egypt an excellent setting in which to explore the implications of investments in quantity and quality of children for receipt of old-age support in a society undergoing the transition to fewer, higher-quality children. Our hypotheses are that parental investments in quantity of children predict their receipt of economic, instrumental, and affective support from children; that parental investments in quality of children via early-life contributions and recent assistance predict support from children; and that gender-specific investments in sons and daughters predict different types of returns. We assume that parents invest strategically in their children as a group to maximize total support in later life, and so we conduct the analysis from the parent’s perspective, treating investments in all children as a collective “investment portfolio” that is intended to yield some collective return.

## Background

### Parental Expectations and Support from Adult Children

The desire for old-age security may motivate fertility if parents are uncertain about their ability to support themselves in old age and do not expect other reliable sources of support (Nugent 1985). Empirical evidence suggests that expectations for material, instrumental, or emotional old-age support influence decisions to bear and rear children among high-parity women in Korea, the Philippines, and the United States (Bulatao 1981). Similarly, 73 % of men and 84 % of women in southern Nigeria expected that children would provide support for them in old age or sickness, and those who expected support from children were less likely to want to limit their fertility (Fapohunda and Todaro 1988).

Yet, the extent to which such expectations are met is unclear (Lee et al. 1994a). Older parents around the world rely most often on their adult children for financial support and care (Agree and Glaser 2009), and adult children provide increased contact and even coresidence when parents experienced losses, such as widowhood (Lee et al. 1994b; Roan and Raley 1996). In Taiwan, children reported providing substantial support to parents (Lee et al. 1994b). In the United States, unmeasured support from coresident children in the form of pooled resources and household labor augments parents' economic well-being and may keep many from falling into poverty (Rendall and Bahchieva 1998). However, a disconnection may exist between parents' expectations and the assistance they ultimately receive (Jellal and Wolff 2002; Seelbach and Sauer 1977). In the United States, intergenerational relations tend to center on children's, not parents', needs (Aquilino 1990; Crimmins and Ingegneri 1990). Also, older persons generally live independently and are more likely to give than to receive financial transfers (Hurd et al. 2007). In Taiwan, parents reported large gaps between expected and actual levels of coresidence with children (Hermalin and Yang 2004).

An important consideration is whether parents can stimulate, through their own giving, children's support. Evidence from varied settings—including Kenya, Nigeria, Peru, and Taiwan—suggests that parents use several strategies to induce support from their children: developing loyalty through investments, threatening disinheritance, threatening the child's reputation, restricting children's mobility or opportunities, and modeling through care for their own parents (Cox and Stark 2005; Fapohunda and Todaro 1988; Hoddinott 1992; Lee et al. 1994b).

### Intergenerational Support During Transition

Research about the expectations and the reality of children's provision of support to their parents has been shaped by the wealth-flow theory. The theory posits that in customary societies, transfers are upward, from children to parents, making investments in children beneficial to parents. With modernization, wealth flows reverse toward children, making children more costly and thus leading to reductions in fertility. However, evolutionary biologists argue that in the aggregate, net transfers over a lifetime *must* be downward because a group in which parents benefit at the expense of their offspring would be maladaptive (Kaplan 1994; Turke 1989). Consistent with this proposition, evidence from hunter-gatherer societies shows net downward wealth flows across the life

course (Kaplan 1994). Our research is not concerned with whether children, over their lives, fully repay their parents' investments, because parents may not require such repayment; rather, we ask whether parents' investments stimulate more-frequent upward transfers, assistance, and companionship.

The practical implication in Egypt and elsewhere of the wealth-flows theory is that the support that older people receive may decrease with demographic transition and economic growth. Thus, the investments that older adults made under assumptions that no longer hold today may not pay off. At the same time, nonfamily institutions that could replace filial support are not well established. In settings like Egypt, older parents today are the "transition generation," being the last to have had high fertility with expectations of returns. A critical question, then, is whether their investments are paying off in terms of economic, instrumental, and emotional support from adult children, despite dramatic changes in norms about family support and new demands on adult children's time and financial resources.

### Parents' Investments in Children

In Egypt, kin relations revolve around a patriarchal kin contract (Joseph 1993, 2000, 2008; Rugh 1984). Members of a lineage are expected to provide each other with instrumental and material resources and expect to receive emotional, economic, and social security (Joseph 1993, 2008; Rugh 1984). The rights and duties of kin members are defined on the basis of their gender, age or generation, and relatedness. The normative life cycle of the Egyptian family dictates that children live with their parents until they have secured the resources for marriage (Singerman and Ibrahim 2001). Often, newlyweds live initially with the husband's parents for economic reasons (El-Zanaty et al. 1996) and establish separate households after the birth of children (Khadr 1997; Nawar et al. 1995). High rates of unemployment and low wages have required today's generation of young Egyptians to remain dependent on their parents well into adulthood (Tabutin and Schoumaker 2005; Winckler 2005). At older ages, parents may resume residence with a married son, especially if they are widowed, experience health declines, or need financial help (Yount 2005).

Egyptian parents invest in children in multiple ways. First, *fertility* is an important component of social identity in Egypt (Rugh 1984), and childbearing is virtually universal, especially among older adults, who had an average of 6.7 children (Engelman et al. 2010). Second, parents invest in child rearing through education and marriage. The level of *education* achieved by Egyptians has increased dramatically between the generations in this study: 60 % of men and 80 % of women 65 years and older had no schooling, compared with 7 % and 15 %, respectively, among those aged 20–24 years (El-Zanaty and Way 2009). Although public policies have facilitated these improvements, parents' commitment was needed to send and retain children in school. *Marriage* is the "occasion for a major intergenerational transfer of wealth," often "larger than the inheritance following a parental death" (Singerman and Ibrahim 2001:8), and substantial assets are expected from both families, although consanguineous marriages may require fewer transfers. The groom's family pays for the wedding and provides housing for the newlyweds; the bride's family provides items for the new household. Third, although less documented, parents continue to assist their adult children: adult married children often live with their parents to avoid the

high cost of housing; many parents provide money and gifts on a regular or an occasional basis; and parents often provide care for their grandchildren, especially children of coresiding sons.

### Children's Returns to Older Parents

The patriarchal kin contract ascribes a duty to children to support their parents and senior relatives, especially when they are widowed or in need of care, with financial support generally expected of sons and instrumental support of daughters and daughters-in-law. In Egypt, where patrilocal endogamy is common, married daughters often live near their parents and continue to provide broader services as needed (Yount 2005). Many older Egyptians expect that at some point, they will be able to rely on economic support from their children, especially their sons. They also expect to delegate the burdens of household maintenance to children and daughters-in-law. Assistance with domestic tasks is expected as a sign of respect, regardless of whether the older parent requires it because of disability or ill health. When older parents require assistance with personal care, norms generally identify daughters and daughters-in-law as providers. Culturally, it is important for older parents and children to receive frequent visits from nonresident children.

### Parent–Child Investments and Returns in the Context of Kin Networks

The extended family is important in Egypt as elsewhere in the Arab world, and investments in children occur within the broader kin network. Kin ties may be especially strong in endogamously married families, where kin interests are more closely intertwined. A man may assist his nephews and nieces, especially if their father is temporarily without means. Such investments may be nominal or substantial, and if the latter, may alter parents' investments in and returns from their children. However, Egyptian parents, and especially fathers, are primarily responsible for the financial maintenance of their children (Shaham 1997). As a result, loans from family members, even when used to invest in children's schooling, would be considered a debt to be repaid by the father, and the investment would arguably still be understood as the parents'. Adult siblings sometimes provide loans or assistance to each other, especially brothers for their sisters (Aarssen 2005), but such transfers are generally not substantial enough to replace parental support. Some scholars even have argued that Egyptian families have become more nuclear over the twentieth century, with decreasing lateral familial obligations (Kholoussy 2010).

### Nonfamily Alternatives for Old-Age Support

In addition to cultural norms, many older Egyptians rely on assistance from their children because alternative mechanisms are insufficient. Formal mechanisms for old-age support exist in Egypt, but only 53 % of the working population is covered by a pension scheme (Loewe 2000), and pensions and survivor benefits typically are low, often well below the Egyptian poverty line (Yount and Sibai 2009). Given this limited system of social insurance, at least one-quarter of older people remain in the labor force (Mason et al. 2001).

A free and universal public health system is available, but few hospitals and facilities offer geriatric care, and the quality of care is often poor (Loewe 2000). Approximately 5 million people are over the age of 60 in Egypt, but fewer than 4,000 long-term hospital beds are designated for older patients, and the few geriatric specialists are concentrated in the city of Cairo (Gadallah 2002). In 2002, approximately 80 recognized facilities provided institutional care for older adults throughout the country (Gadallah 2002). Some complementary informal facilities are run through mosques and churches (Boggatz and Dassen 2005; Nandakumar et al. 1998), offering varied levels and qualities of care (Boggatz and Dassen 2005; Sinunu et al. 2008).

Formal home-based care exists in some areas but is costly, and many opt instead for informal, untrained helpers who provide service in return for a low salary, food, and accommodation (Boggatz et al. 2009b). Older Egyptians often reject home-care services and nursing homes because of costs and the perception that receiving nonfamily care is shameful (Boggatz et al. 2009a, b). Thus, support from children is the dominant form of support in this setting, and other forms are generally nominal and complementary.

## Hypotheses

With the growing number of older adults around the world, the question of parents' reliance on children's assistance is relevant for families and policy (Agree and Glaser 2009). In addition, because love, companionship, and stability are consistently among the most common explanations for having children (Morgan and Berkowitz King 2001), older adults are likely to expect extensive emotional returns from children. Thus, with the global transition to lower fertility and higher parental investments in fewer children, understanding the returns to older parents' childbearing and child-rearing investments is important. Using rich data from older Egyptian adults, we address the following specific hypotheses:

- H1: Parental investments in the quantity of children, as reflected by the number of surviving children, predict the receipt of economic, instrumental, and affective support from children.
- H2: Parental investments in the quality of children, as reflected in (a) past investments in children's schooling attainment and marriage and (b) the recent provision of housing, money, gifts, and care for grandchildren predict economic, instrumental, and affective support from children.
- H3: Parent's gender-specific investments in sons and daughters predict different types of support received.

## Methods

### Study Setting

This study was set in Ismailia governorate, located in Northeastern Egypt and housing 844,100 residents in 2003 (United Nations Development Programme and The Institute of National Planning 2005). Ismailia is better off by several economic

and social indicators than other parts of Egypt and has less customary family forms. In 2004, almost all households had electricity (99 %) and piped water (93 %), the per capita gross domestic product (GDP) slightly exceeded the national average (\$6,643 vs. \$6,142 in purchasing power parity), and proportionately fewer residents were poor compared with the national average (0.13 vs. 0.20) (United Nations Development Programme and The Institute of National Planning 2005). Several characteristics make Ismailia a particularly apt setting to study returns on parental investments. Today's older adults made substantial investments in both quantity and quality of children. They had high fertility, with a population growth rate of 2.5 in 1960–1986, resulting in an average of more than 5 surviving children in our study population. Subsequent investments in children also were high, as indicated by large increases in basic and secondary school enrollment and literacy (52.7 % and 29.2 %, respectively, in 1960–1961 versus 93.8 % and 72.95 %, respectively, in 2003–2004) and by the high proportion of the work force engaged in skilled professions (27.7 % vs. 24.5 % nationally) (United Nations Development Programme and The Institute of National Planning 2005).

### Sample and Data

The sampling frame for this study was generated from a household census in 2003 in one rural and one urban district of Ismailia. An age-gender stratified sample with oversampling of the oldest adults was selected using ratios of 1:3 for 50- to 59-year-olds, 1:2 for 60- to 69-year-olds, and 1:1 for 70-year-olds and older, within each gender. This sampling strategy resulted in some coresident older adults being selected for inclusion. Of the 1,182 adults selected to participate, 1,053 (88 %; 491 men, 562 women) consented to participate and completed a face-to-face interview.

Survey instruments were drafted in English, translated into Egyptian colloquial Arabic, and back-translated at the Social Research Center (SRC) of the American University in Cairo. The total completion time for the interview and physical performance testing ranged from 45 to 90 minutes. Instruments and protocols were adapted from several prior studies of older adults. The survey included a socioeconomic module with questions about the schooling of the respondent and his or her parents, as well as the respondent's marital, reproductive, and occupational history, current sources of income, and contact with natal kin. For respondents with surviving children, a transfers module adapted from the *Multi-country Study of Older Adults in Southeast Asia* (Hermalin 1999) included questions on the frequency (never, occasionally, or regularly) of transfers in the prior year between the older parent and each coresident and noncoresident child: "Excluding small gifts, did you give [receive] food or clothes or personal items to [from] (name) as regular help or occasional or for special circumstances in the last 12 months?" Respondents reported their residential proximity to each living child (coresident, same building, same neighborhood, same village, and so on), and frequency of contact (daily, weekly, monthly, yearly, or never) with each noncoresident child: "How frequently does (name) visit you?" Parents provided information on the age, schooling, and marital status of each surviving child. They also reported the number of grandchildren from each child and involvement in childcare: "Do you provide childcare to (name)'s children?"

An extensive health module collected self-reported and objective information about chronic health conditions (blood pressure, diabetes, lung disease, heart disease, stroke, arthritis, osteoporosis, and cancer); difficulty with basic and instrumental activities of daily living (ADLs and IADLs, respectively); medications taken; and depressive symptoms, a modified mini mental state exam (M-MMSE) to assess cognitive functioning (Yount 2008), and health behaviors. All respondents were asked to identify two individuals who were their primary helpers (“Who usually helps you with [marked activities]?”) and to state each helper’s gender, relationship (spouse, son, daughter, other relative, nonrelative; for children, they were not asked *which* of their children helps). For each helper, respondents were asked whether that helper provided assistance with each of 13 activities, which can be combined into three variables capturing *assistance with household chores* (heating meals, light cleaning, or heavy cleaning), *transactions and communication* (managing money, using the telephone, going outside, going long distances, or shopping), and *ADLs* (getting out of bed, getting dressed, eating, walking, bathing, using the toilet, or using medications).

Local interviewers were recruited through the University of Ismailia and received one week of didactic and experiential training. Spot checks of a random subset of interviews were conducted during fieldwork to ensure quality. Trained staff at the SRC developed and used customized programs for data entry and management.

For this analysis, we excluded 150 respondents who had no children, had no surviving children, or provided no information about their children. Compared with those who were included, those excluded more often were men (63 % vs. 47 %), were younger (59 vs. 61 years), lived in urban areas (87 % vs. 66 %), had more schooling (4.1 vs. 2.4 grades), and worked at age 50 (64 % vs. 52 %).

## Variables and Analysis

The analytic outcomes were economic transfers, instrumental assistance, and visits received by the older parents from children in the prior year. They captured whether the respondent’s main source of income was a child (yes/no); frequency (regular/not regular) of receiving substantial gifts or money from any child; whether a child was a primary helper for each of the three types of activities (household chores, transactions and communication, and ADLs; yes/no); and frequency of visits (daily/not daily) from any noncoresiding child among parents with at least one noncoresiding child.

To address Hypothesis 3, we considered investments in and receipt of support from children by gender among parents with both sons and daughters. The outcomes for which it was possible to determine the gender of the children involved were modified slightly. The receipt of gifts or money was disaggregated into two variables indicating receipt from a daughter (yes/no) or from a son (yes/no), as were daily visits from sons and daughters residing elsewhere. Measures for instrumental assistance were similarly disaggregated into six variables indicating whether a son (yes/no) and whether a daughter (yes/no) was the main helper for each of the three types of activities.

The main explanatory variables were the investments that older parents made in their children. Because the unit of analysis was the older parent, with a focus on what a parent gave to and received from his or her set of children, we aggregated data on investments in children into parental averages. The indicator of investment in



quantity of children was the number of surviving children, reflecting a combination of childbearing and investments in health. In alternative specifications, we substituted this with the number of children ever born. Indicators of parents' investments in child rearing were average grades of schooling and the proportion of children married. Recent investments by parents were whether any child was living with the parent in a home owned by the parent or her spouse (yes/no), coded to distinguish from situations where the parent was a dependent in the child's home; whether the parent provided money or substantial gifts on a regular basis (yes/no) to at least one child during the past 12 months; and whether the parent provided care for any grandchildren in the same period (yes/no). In analyses of gender-specific investments and returns, these variables were transformed as numbers of surviving sons and daughters, average grades of schooling of sons and of daughters, proportions of sons and of daughters married, and whether any son and whether any daughter received regularly gifts or money (yes/no), lived in a home owned by the parent (yes/no), or received care for his or her children in the previous year (yes/no).

Several other characteristics were included as controls. Study design-based controls were the respondent's age in years and urban versus rural residence. Analyses also controlled for the parent's gender, marital status at the time of interview (married/unmarried), completed grades of schooling, work status at age 50 (yes/no), score of household assets and amenities at the time of interview (0–17 scale), number of ADLs performed with any difficulty, score for objective cognitive functioning (0–20 scale), and number of doctor-diagnosed chronic conditions (0–8). Analyses also controlled for the average age of the parent's children and the gender composition of surviving children (proportion daughters). Controls for extended kin ties captured the extent to which older parents and their children may have had access to other sources of support: whether the older respondent maintained close contact (living together or having weekly visits or phone calls) with a brother or sister; whether the older parent was married to a paternal or maternal cousin; and whether the older respondent was in more than one marriage (either through remarriage or polygamy, both of which are rare: 7 % of respondents had their first marriage end in divorce, and 1 % were currently polygamously married), which may indicate more kin ties but also more competing obligations.

We first examined the completeness and distribution of each variable. We then estimated bivariate associations to assess potential problems of colinearity among the covariates and unadjusted associations of the covariates and outcomes. We used logistic regression to estimate multivariate models for each outcome. The main explanatory variables were the respondent's investment in childbearing ( $s$ ) and vectors of past investments in child rearing ( $\mathbf{R}$ ) and recent assistance to children ( $\mathbf{T}$ ). Control variables were vectors of parent characteristics ( $\mathbf{P}$ ) and aggregate characteristics of the parent's children ( $\mathbf{C}$ ). Models took the following general form:

$$\text{Ln} \left( \frac{\mathbf{T}_j}{1 - \mathbf{T}_j} \right) = \beta_{0j} + \beta_{1j}s + \beta_{2j}\mathbf{R} + \beta_{3j}\mathbf{T} + \beta_{4j}\mathbf{P} + \beta_{5j}\mathbf{C},$$

where  $\mathbf{T}_j$  denotes the probability of receiving each type of assistance ( $j = 1, \dots, 4$ ) from any of one's children.

One challenge to this approach is that some families may be more giving than others. We used the alternative approach of propensity score matching. This procedure allows us to reduce selection bias and to avoid imposing a linear relationship between “treatment” (investments in children) and outcome by modeling the probability of treatment as a function of observed attributes (earlier-life characteristics) that predated and may have shaped the probability of treatment. We thus modeled a counterfactual scenario, identifying individuals with similar predispositions to invest in their children and estimating how those who invested more than the average fared in terms of returns from their children compared with those who invested at population-average levels or below. We used earlier characteristics, such as the parent’s childhood socioeconomic circumstances and age of first employment and marriage (variables defined in Table 4), to estimate the propensity to invest in above-average (1) quantity of children, (2) quality of children (mean education and proportion married), and (3) recent assistance to children (economic transfers, coresidence in a parent-owned home, and care for grandchildren). We used two alternative algorithms for matching cases and controls: the nearest-neighbor and caliper/radius methods.

For descriptive statistics and regression models, weights, strata, and cluster adjustments were used to account for survey design. The statistical software used was Stata 11. Only statistically significant relationships are discussed here unless otherwise noted.

## Results

### Population Overview

On average, respondents were in their early 60s, and the majority lived in urban areas (Table 1). Two-thirds of respondents were married at the time of interview. The average schooling attainment was low, at 2–3 grades. More than one-half of respondents had been working at age 50. Most respondents were experiencing some disability. The prevalence of close ties to extended kin was high, with 36 % of parents being married to a cousin, the majority having close contact with a sibling, and 13 % having been married to more than one person. Respondents had, on average, 6.4 children ever born (0–15 for mothers, 0–18 for fathers) and more than 2 surviving sons and 2 surviving daughters. The average age of parents’ surviving children was 30 years. The average number of completed grades among respondents’ children was 10.6 for sons and 9.7 for daughters, and a majority of daughters (71 %) and sons (58 %) were married.

Most parents were still providing for their children: 68 % had given gifts or money to a child in the prior year; 66 % of respondents owned their home and had at least one coresiding child; and one-half provided care for the children of at least one child. The percentage of daughters who received each of these types of transfers was lower than that of sons.

Parents were not receiving returns from children on a comparable scale. Less than one-quarter relied on a child as a major source of income. Just more than one-third reported receiving gifts or money from any child regularly in the past year, more often

**Table 1** Characteristics of older parents, Ismailia, Egypt ( $n = 903$ )

	Mean	SE
<b>Respondent Attributes</b>		
Female	0.53	0.06
Age, in years	61.37	0.93
Urban residence	0.66	0.07
Married	0.72	0.03
Grades of schooling	2.39	0.29
Working at age 50	0.52	0.05
Household standard of living score, 0–17	10.03	0.22
Number of ADLs with difficulty	1.62	0.07
Modified MMSE score, 0–20	16.03	0.19
<b>Indicators of extended kin ties</b>		
Married to a cousin	0.36	0.02
Close with any sibling	0.52	0.03
Close with a brother	0.39	0.02
Multiple marriages	0.13	0.01
<b>Attributes of Surviving Children</b>		
Proportion female	0.48	0.01
Average age, in years	29.58	0.81
<b>Parental Investments in Children</b>		
<b>Childbearing<sup>a</sup></b>		
Number of children ever born	6.38	0.19
Number of surviving children	5.11	0.13
Number of surviving sons	2.57	0.08
Number of surviving daughters	2.54	0.08
<b>Earlier-life investments</b>		
Average grades of schooling	10.04	0.26
Average grades among sons	10.59	0.23
Average grades among daughters	9.67	0.41
<b>Proportion of children married</b>		
Proportion of sons married	0.58	0.03
Proportion of daughters married	0.71	0.02
<b>Recent investments</b>		
Gives gifts and money to at least one child regularly	0.68	0.02
Gives to at least one son	0.54	0.03
Gives to at least one daughter	0.49	0.02
At least one child coresides in parent-owned home	0.66	0.02
At least one son coresides	0.57	0.03
At least one daughter coresides	0.39	0.02
Provides care for grandchildren	0.49	0.03
Care for children of at least one son	0.53	0.03
Care for children of at least one daughter	0.50	0.02

**Table 1** (continued)

	Mean	SE
Parental Receipts From Children		
At least one child is a major source of income	0.24	0.02
Receives gifts or money regularly from at least one child	0.31	0.03
Receives from at least one son	0.28	0.02
Receives from at least one daughter	0.09	0.01
A child is a main instrumental helper	0.29	0.04
A son is a main helper	0.10	0.02
A daughter is a main helper	0.28	0.02
Receives instrumental assistance		
With ADLs	0.10	0.01
With domestic work	0.25	0.02
With transactions and communication	0.25	0.03
Daily visits from any nonresident child, conditional on having at least one nonresident child <sup>a</sup>	0.58	0.02
Visits from at least one son	0.41	0.03
Visits from at least one daughter	0.36	0.03

<sup>a</sup>781 of the respondents have at least one nonresident child, 611 had at least one nonresident son, and 394 had at least one nonresident daughter.

from sons than from daughters. Parents more often received instrumental help from daughters, with 28 % of respondents naming a daughter as a main helper, compared with 10 % naming a son. One-fourth of respondents received help from a child with house cleaning, making purchases, and communications. One in 10 reported assistance with ADLs from a child. Parents often reported daily visits from noncoresident children (41 % from sons, 36 % from daughters).

### Returns on Investments in Childbearing

The number of surviving children was positively associated with the receipt of various types of support. Each additional surviving child was associated with increases in the odds of having a child as a primary source of income (Model 1, Table 2). Receipt of instrumental support, especially with chores, transactions, and communication, also increased with each additional surviving child, as did the odds of daily visits from noncoresiding children. However, there was no significant association between the number of surviving children and receipt of ADL help from children, suggesting that ADL help is based on need, not on availability of helpers.

In alternative models using the number of children ever born rather than surviving children, the relationships between children born and returns to parents were significantly associated only with receiving daily visits from nonresident children (Table 5 in the appendix). These weaker relationships are not surprising, given that children who did not survive would not be able to provide returns to parents. This finding suggests

**Table 2** Odds that older respondent receives economic support, visits, or instrumental assistance during the last year, associated with investments in children throughout life: Results from survey-adjusted logistic regression, Ismailia, Egypt ( $n = 903$ )

Parental Investments	Children Are a Primary Source of Income	Receives Gifts or Money From Children	Receives Assistance With Domestic Chores	Receives Assistance With Transactions & Communication	Receives Assistance With ADLs	Nonresident Children Visit Daily
Childbearing						
Surviving children	1.11*(0.05)	1.08 (0.05)	1.12*(0.05)	1.11***(0.04)	1.08 (0.08)	1.18***(0.05)
Investments in Child Rearing						
Average years of education	1.02 (0.02)	0.98 (0.03)	1.05*(0.02)	1.03 (0.03)	1.00 (0.03)	1.02 (0.03)
Proportion of children married	1.52 (0.73)	2.45 <sup>†</sup> (1.10)	0.10***(0.06)	0.11***(0.07)	0.11***(0.09)	11.22***(4.74)
Recent Investments in Children						
Frequent economic transfers	0.56*(0.14)	0.77 (0.17)	1.75*(0.38)	1.53 (0.48)	1.97***(0.40)	1.55***(0.23)
A child resides in parent's home	1.35 (0.26)	2.19***(0.51)	2.50***(0.49)	2.45***(0.48)	2.77***(0.89)	1.67***(0.40)
Provide childcare to grandchildren	1.01 (0.18)	1.05 (0.20)	0.97 (0.26)	1.10 (0.24)	1.19 (0.35)	2.04***(0.35)
Controls						
Respondent attributes						
Female	1.87*(0.44)	2.44***(0.67)	5.56***(2.05)	5.40***(1.74)	6.16***(2.89)	0.89 (0.23)
Age, in years	1.00 (0.02)	1.02 (0.02)	1.04*(0.02)	1.03 <sup>†</sup> (0.01)	1.03*(0.01)	1.00 (0.01)
Urban residence	2.58***(0.60)	1.58*(0.32)	0.67 (0.16)	0.46*(0.14)	1.27 (0.34)	0.41***(0.09)
Married	0.70 <sup>†</sup> (0.14)	0.42***(0.07)	0.50***(0.09)	0.38***(0.08)	0.52*(0.15)	1.02 (0.17)
Grades of schooling	0.85***(0.03)	0.93 <sup>†</sup> (0.03)	0.96 (0.03)	0.92 <sup>†</sup> (0.04)	0.97 (0.05)	1.06*(0.03)
Working at age 50	1.07 (0.19)	0.85 (0.22)	1.28 (0.43)	1.16 (0.22)	1.47 (0.56)	0.81 (0.20)
Household standard of living score, 0–17	1.01 (0.03)	0.96 (0.03)	1.01 (0.04)	0.99 (0.04)	0.98 (0.05)	1.01 (0.04)
Number of ADLs with difficulty	1.02 (0.09)	1.00 (0.08)	1.06 (0.07)	1.04 (0.08)	1.64***(0.14)	1.03 (0.07)
Number of doctor-diagnosed chronic conditions	0.98 (0.11)	0.89 (0.10)	1.06 (0.10)	1.13 (0.11)	1.33 (0.23)	0.90 (0.09)

Table 2 (continued)

Parental Investments	Children Are a Primary Source of Income	Receives Gifts or Money From Children	Receives Assistance With Domestic Chores	Receives Assistance With Transactions & Communication	Receives Assistance With ADLs	Nonresident Children Visit Daily
Modified MMSE score, 0–20	0.96 (0.03)	0.99 (0.02)	0.99 (0.03)	0.94 (0.04)	0.97 (0.04)	0.96 (0.03)
Indicators of Extended Kin Ties						
Married to a cousin	0.87 (0.15)	0.92 (0.12)	1.44 (0.32)	1.67*(0.42)	1.33 (0.45)	1.57†(0.37)
Close with a sister	0.64†(0.17)	0.79 (0.24)	0.79 (0.33)	1.02 (0.32)	1.06 (0.44)	0.89 (0.27)
Close with a brother	1.51 (0.42)	1.25 (0.37)	0.79 (0.32)	0.58†(0.16)	0.73 (0.39)	1.23 (0.33)
Multiple marriages	0.65†(0.16)	0.66†(0.16)	1.06 (0.33)	1.15 (0.36)	1.43 (0.58)	0.91 (0.21)
Attributes of Respondent's Children						
Proportion female	0.35**(0.13)	0.19**(0.09)	8.63**(3.11)	4.00**(1.74)	2.10 (1.49)	0.44*(0.18)
Average age, in years	0.99 (0.02)	0.99 (0.02)	1.00 (0.02)	1.00 (0.01)	1.02 (0.02)	0.99 (0.01)

Notes: Only respondents with surviving children are included. Linearized *t* statistics are shown in parentheses.

†  $p \leq .10$ ; \*  $p \leq .05$ ; \*\*  $p \leq .01$

that separating the effects of childbearing from child rearing is not straightforward and that the number of surviving children also captures some child-rearing factors that helped children survive.

### Returns on Investments in Child Rearing

In Table 2, there was no evidence that parents who had invested in more schooling for their children received more economic assistance from their children. Among types of instrumental support, only the odds of help with household chores increased with children's schooling. Investments in marriage were only marginally associated with economic returns and were associated with lower odds of receiving instrumental support, perhaps because of competing demands on adult children's time from their own children. Parents with a higher proportion of married children were more likely to receive daily visits, as expected given that more of their children were living elsewhere.

### Returns on Recent Instrumental and Financial Transfers

Table 2 also summarizes the associations between assistance from older parents to children in the prior year and assistance received by the parent from children during the same period. Economic exchanges were uncommon between parents and children: the odds of receiving income and other economic transfers from children were much lower among parents who made transfers to their children in the past year. Parents' gifts and money were, however, associated with receipt of instrumental help with household chores and ADLs, perhaps indicating that parents were compensating children for personal care received. Parents' recent transfers also were associated with higher odds of daily visits.

Having at least one child coresident in the parent's home was associated with higher odds of receiving frequent money and gifts from children, although not income. Parents with coresident children also had much higher odds of receiving instrumental assistance with chores, transportation, communication, and ADLs. Having a coresident child also was associated with higher odds of nonresident children visiting, indicating the centrality of the parental home for the family network.

Care for grandchildren was not associated with economic transfers, indicating that adult children did not compensate their parents economically for childcare. Childcare provided by parents was associated with higher odds of daily visits, perhaps made to drop off and pick up children.

### Investments in and Returns From Sons and Daughters

Examining the results disaggregated by child's gender, a greater number of surviving sons—and to a lesser extent, of daughters—was associated with returns from children of that gender (Table 3). An increasing number of sons was associated with economic transfers, and an increasing number of daughters was associated with instrumental assistance, although this latter relationship was significant only when we included parents with no surviving sons (not shown). Older adults with more sons and

**Table 3** Odds that older parent receives gender-specific returns on investments in sons and daughters: Results from survey-adjusted logistic regression, Ismailia, Egypt ( $n = 770$ )

Parental Investments	Receives Gifts and Money From Sons	Receives Instrumental Help From Sons	Nonresident Sons Visit Daily	Receives Gifts and Money From Daughters	Receives Instrumental Help From Daughters	Nonresident Daughters Visit Daily
<b>Childbearing</b>						
Surviving sons	1.21* (0.10)	1.10 (0.07)	1.16 <sup>†</sup> (0.10)	0.98 (0.13)	0.96 (0.08)	1.06 (0.09)
Surviving daughters	0.86 <sup>†</sup> (0.07)	0.99 (0.11)	0.95 (0.08)	1.00 (0.12)	1.14 (0.10)	1.45** (0.13)
<b>Investments in Child Rearing</b>						
Sons average years of school	0.99 (0.02)	1.02 (0.03)	1.02 (0.03)	0.98 (0.02)	1.00 (0.03)	1.00 (0.03)
Daughters average years of school	1.03 (0.03)	1.02 (0.03)	1.01 (0.03)	0.94 <sup>†</sup> (0.03)	1.04 (0.03)	1.00 (0.03)
Proportion of sons married	1.72 (0.88)	0.49 (0.25)	6.83** (3.35)	2.72 (1.78)	0.47 (0.21)	2.10 (1.14)
Proportion of daughters married	0.68 (0.35)	2.49 (2.52)	1.13 (0.72)	1.05 (0.61)	0.22** (0.10)	5.09* (3.25)
<b>Recent Investments in Children</b>						
Frequent economic transfers to any son	0.65 (0.20)	1.09 (0.30)	1.69 <sup>†</sup> (0.46)	0.60 (0.29)	0.51* (0.15)	1.18 (0.33)
Frequent economic transfers to any daughter	0.65 (0.24)	0.74 (0.22)	1.11 (0.30)	2.51* (1.00)	3.17** (1.24)	1.79* (0.43)
Son resides in parent's home	2.79** (0.74)	2.84** (0.91)	1.75* (0.39)	0.73 (0.35)	0.47* (0.15)	1.72* (0.39)
Daughter resides in parent's home	0.65 (0.22)	0.75 (0.39)	1.49 (0.56)	1.38 (0.74)	14.03** (3.32)	0.52* (0.14)
Provides childcare for son's children	0.96 (0.24)	1.45 (0.57)	2.71** (0.56)	0.54 (0.24)	0.42** (0.13)	0.60 <sup>†</sup> (0.18)
Provides childcare for daughter's children	1.46 <sup>†</sup> (0.33)	0.64 <sup>†</sup> (0.14)	0.90 (0.19)	1.74 (0.58)	1.98* (0.60)	3.30** (0.64)

*Notes:* Estimated only for parents with at least one son and at least one daughter. Models control for respondent's characteristics (gender, age, marital status, urban versus rural residence, household standard of living, years of school completed, work status at age 50, number of ADL limitations, MMSE score, and indicators of extended kin ties) and for average age of children. Linearized  $t$  statistics are shown in parentheses.

<sup>†</sup> $p \leq .10$ ; \* $p \leq .05$ ; \*\* $p \leq .01$



daughters were more likely to receive daily visits from nonresident sons and daughters, although the association was weaker for sons. Interestingly, sons' odds of returns to parents, especially in terms of economic transfers, were lower with each additional daughter, perhaps indicating a son's financial obligations to assist his sisters.

There was no evidence of returns of any type to additional grades of schooling for boys or for girls; nor were returns on investments in sons' and daughters' marriages observed. Parents with a higher proportion of married daughters were much less likely to have a daughter as a main helper, probably because a daughter's responsibilities shift to her husband's family upon marriage. Parents with a higher proportion of married sons and daughters were more likely to receive daily visits from each, probably as married children move into their own residences in the same community.

Current investments in sons and daughters were associated with returns from children of the corresponding gender. Parents who made economic transfers had higher odds of receiving daily visits, and transfers to daughters but not to sons were associated with returns of all types. Although parents were much more likely to give than to receive, parents who made economic transfers to their daughters were more likely to receive economic transfers in return. The odds of having a daughter as a main helper also increased with economic transfers to daughters. There were apparent trade-offs in the support received from additional sons and daughters: transfers to children of one gender tended to be associated with lower returns from children of the opposite gender. This relationship was mostly significant with respect to returns from daughters, which decreased with transfers to sons, even after we controlled for transfers to daughters.

Parents who had a son or daughter living in their home had higher odds of receiving economic transfers, but significantly so only from sons. They were also much more likely to receive instrumental help from sons and daughters, with the relationship being especially strong for daughters. Parents with a coresiding daughter could be sure that a daughter would be a primary helper, although these odds were reduced by the presence of coresiding sons. Parents with a coresiding daughter were much less likely to receive daily visits from daughters residing elsewhere, while parents with coresiding sons were more likely to receive daily visits from other sons and daughters.

The trade-off between providing to some children and receipt from other children is clear with respect to care for grandchildren. Providing care for the children of sons was associated with higher odds of daily visits from sons, while care for the children of daughters was associated with higher odds of instrumental support and daily visits from daughters. However, the odds of visits and instrumental help from daughters decreased with care provided to the children of sons. These patterns reflect parents' decisions about allocating their scarce time and resources among their sons and daughters, and sons and daughters responding not only to what they receive but also to what is given to their siblings instead of to them.

#### Estimated Returns Based on Propensity Score Matching Methods

Table 4 shows estimates from propensity score matching with two matching methods that yield generally consistent results, which also corroborate those discussed earlier. Parents who had an above-average number of surviving children were more likely to

**Table 4** Propensity-score matching results predicting returns from children

Number of Surviving Children		Caliper/Radius Matching Method ( <i>n</i> treated = 308; <i>n</i> controls = 401)	
	Average Treatment Effect for the Treated (ATT)	SE	<i>t</i>
Children Are a Primary Source of Income	0.006	0.049	0.132
Receives Gifts or Money From Children	0.026	0.053	0.490
Receives Assistance With Domestic Chores	0.000	0.045	0.000
Receives Assistance With Transactions and Communication	0.039	0.044	0.879
Receives Assistance With ADLs	0.026	0.032	0.814
Nonresident Children Visit Daily	0.087	0.053	1.646
Earlier-Life Investments			
Children Are a Primary Source of Income	-0.027	0.050	-0.536
Receives Gifts or Money From Children	-0.059	0.053	-1.100
Receives Assistance With Domestic Chores	-0.108	0.048	-2.267*
Number of Surviving Children		Caliper/Radius Matching Method ( <i>n</i> treated = 218; <i>n</i> controls = 562)	
	Average Treatment Effect for the Treated (ATT)	SE	<i>t</i>
Children Are a Primary Source of Income	0.061	0.036	1.682 <sup>†</sup>
Receives Gifts or Money From Children	0.073	0.039	1.874 <sup>†</sup>
Receives Assistance With Domestic Chores	0.033	0.035	0.952
Receives Assistance With Transactions and Communication	0.037	0.035	1.069
Receives Assistance With ADLs	0.045	0.025	1.807 <sup>†</sup>
Nonresident Children Visit Daily	1.430	0.039	3.661**
Earlier-Life Investments		Caliper/Radius Matching Method ( <i>n</i> treated = 218; <i>n</i> controls = 562)	
	Average Treatment Effect for the Treated (ATT)	SE	<i>t</i>
Children Are a Primary Source of Income	0.009	0.038	0.236
Receives Gifts or Money From Children	-0.023	0.040	-0.570
Receives Assistance With Domestic Chores	-0.055	0.035	-1.597

Table 4 (continued)

Receives Assistance With Transactions and Communication	-0.108	0.048	-2.258*	-0.058	0.035	-1.682†	
Receives Assistance With ADLs	-0.063	0.036	-1.755†	-0.022	0.026	-0.841	
Nonresident Children Visit Daily	0.158	0.052	3.046**	0.153	0.038	4.040**	
	Recent Investments						
	Nearest-Neighbor Matching Method ( <i>n</i> treated = 190; <i>n</i> controls = 145)						
	Average Treatment Effect for the Treated (ATT)			Caliper/Radius Matching Method ( <i>n</i> treated = 185; <i>n</i> controls = 539)			
		SE	<i>t</i>		SE	<i>t</i>	
Children Are a Primary Source of Income	-0.016	0.054	-0.291	-0.022	0.040	-0.546	
Receives Gifts or Money From Children	0.042	0.058	0.732	0.036	0.043	0.839	
Receives Assistance With Domestic Chores	0.079	0.053	1.501	0.101	0.041	2.471*	
Receives Assistance With Transactions and Communication	0.074	0.052	1.420	0.102	0.040	2.567*	
Receives Assistance With ADLs	0.079	0.036	2.204*	0.059	0.030	1.982†	
Nonresident Children Visit Daily	0.137	0.056	2.427*	0.106	0.040	2.634**	

*Notes:* Propensity scores were calculated using the following observable characteristics: For the treatment of *above-average number of surviving children*: sex, age, was born in Ismailia, grew up in a rural area, number of siblings, is Muslim, father's education, grades completed, smoked at age 25 years, worked before age 30 years, work sector, married a blood relative, and year of marriage. For the treatment of *above-average earlier-life investments in children*: sex, age, grew up in a rural area, was born in Ismailia, number of siblings, is Muslim, father's education, grades completed, literate, smoked at age 25 years, worked before age 30 years, work sector, married a blood relative, year of marriage, and number of children died. For the treatment of *above-average recent investments in children*: sex, age, grew up in a rural area, was born in Ismailia, number of siblings, is Muslim, father's education, grades completed, literate, smoked at age 25 years, worked before age 30 years, work sector, married a blood relative, year of marriage, number of children died, was working at age 50 years, lives in urban area, household socioeconomic status, is currently married, and the number of doctor-diagnosed chronic conditions.

†  $p \leq .10$ ; \*  $p \leq .05$ ; \*\*  $p \leq .01$

receive daily visits from nonresident children and were marginally more likely to receive daily visits, income, other economic transfers, and assistance with ADLs compared with those who had an average number of surviving children or fewer. Those who invested above the average in children's schooling and marriage were more likely to receive daily visits but were less likely to receive instrumental assistance. Those who invested above the average in their children during the past year were more likely to receive daily visits and instrumental assistance.

## Discussion

This study examined whether parental investments in child quantity and quality were associated with support from children at older ages and whether such returns on parental investments differed between sons and daughters. Understanding whether support from children is motivated by parental investments is particularly important in the context of decreasing fertility and shifting norms of intergenerational assistance. Also, examining multiple financial and nonfinancial investments and returns makes it possible to capture family support even during periods of economic hardships and transitions in norms. We capitalized on a rich data set on assistance between older adults and their children in Egypt, where intergenerational support is customary but social, economic, and demographic changes may constrain upward transfers. We found that investments in quantity of children and support to adult children were associated with returns from children, especially in the forms of frequent contact, economic assistance from sons, and instrumental assistance from daughters.

Parental investments in quantity of children (H1) were associated with the most diverse types of support from children, including economic transfers, instrumental assistance, and daily contact. These results corroborate patterns of intergenerational support in non-Arab settings (Hoddinott 1992; Zimmer and Kwong 2003).

In contrast, parents' investments in child quality in the forms of schooling and marriage (H2a) were not associated with greater returns. With the government's rapid expansion of formal schooling, children may perceive education as a public entitlement. Education also may open opportunities for work farther from home or with more responsibilities, reducing the frequency with which children visit or assist their parents, while recent economic hardships may have limited the financial payoffs of education. Private tutoring or schooling may be clearer indicators of parental investments and should be considered for future studies. Young Egyptians increasingly work to help pay the costs of marriage, so parents may not have been the sole contributors to these costs. Further, married children may be experiencing competing demands within their own nuclear families (Sinunu et al. 2008).

Among investments in quality, those associated with the broadest returns were recent assistance to children (H2b) and especially the provision of housing. Coresidence in the parent's house likely facilitates transfers through daily contact and pooling of resources. Recent economic transfers from parents were associated with children's assistance with household chores and ADLs and with daily visits. Care for

grandchildren was associated only with daily visits, perhaps to drop off and pick up grandchildren rather than to assist the older parent.

Most parental investments predicted daily visits from children, supporting the idea that investments nurture intergenerational solidarity (Bengtson and Roberts 1991). Visits are a channel for transfers but are themselves highly valued by parents (Tomassini et al. 2004). Almost all parents reported receiving instrumental assistance from someone, and for one-third of them, a child was the main helper. Parents were more likely to receive instrumental assistance from children if they had more surviving children, had children living in their home, or provided children with ongoing economic support. These patterns indicate that children's decisions to provide help are guided not only by parental needs and societal norms but also by their relationship with the parent, which, in part, is a function of investments. One-third of parents received frequent economic transfers from a child; and for one-quarter of parents, a child was the main source of income. These transfers were associated with investments in quantity of children and with providing housing for adult children.

Parents made fairly equal investments in their sons and daughters, and they received different returns on their investments in sons and daughters (H3). Having additional surviving sons and providing housing for sons predicted economic transfers, whereas the odds of receiving economic transfers decreased with additional daughters. Most current investments in daughters were associated with instrumental assistance from daughters, while only coresidence with a son was associated with instrumental help from a son. Given that parents were not asked specifically about assistance received from daughters-in-law, some of the care attributed to coresiding sons may have been provided by a son's wife. Still, from the parent's perspective, the benefits of sons include the services provided by his wife and children (Hoddinott 1992), so these are also returns on parental investment (Kandiyoti 1988). Almost equal proportions of parents received economic and instrumental assistance from sons and daughters, each in their own domains. About 28 % of parents received economic transfers from sons and 9 % from daughters, while about 28 % of parents received instrumental assistance from daughters and 10 % from sons. These patterns of returns likely reflect persistent differences in access to resources between men and women.

Although this analysis focused on parental investments in their aggregate set of children rather than strategic allocations to specific children, we did find some suggestion that sons and daughters responded not only to what they received but also to parental investments in their siblings. This finding echoes Caldwell's (1978) observation that sibling rivalry is an important factor in family transfers. Most importantly, we see decreases in instrumental assistance from daughters associated with investments in sons even after accounting for investments in the daughters themselves. These patterns may reflect the greater availability of daughters-in-law to provide help if sons are married and living with the parent. Nonresident daughters also were less likely to visit their parents if there were other young women available to help, such as sisters (as evidenced by coresident daughters) or sisters-in-law (as evidenced by parent's care for sons' children). That there were more decreases in returns from daughters with investments in sons can be interpreted as evidence that parents' relationships with sons were more stable, perhaps solidified by custom, while their relationships with daughters were more responsive to the nature of family relations.

The analyses presented here did not distinguish between mothers and fathers, who may have made different investments and received different returns; patterns of transfers have been shown to differ between mothers and fathers and their sons and daughters (Yount et al. 2012). It is difficult to disentangle each parent's contribution: if a child attended school, was it the mother, the father, or both, who facilitated it? In most cases, each probably contributed in different ways, with finances, time, or encouragement; and it would be difficult for the child—and certainly for the researcher—to determine whom to thank. For this reason, we assumed that each parent had a determining role in the investments into his or her children and that the children recognize and respond to this determining role of each parent.

This analysis has some limitations. The data are not nationally representative; still, they provide an excellent context for studying returns on investments in children. Some information, such as wealth and income, was self-reported. A limitation generally faced by studies of intergenerational transfers (Turke 1991) is that we did not have information on net wealth flows over the life course or even at one point in time. We did not map all possible transfers or their magnitudes. We had information on major investments by parents and on the frequency of some key indicators of intergenerational support, and our conclusions are largely based on the assumption that the magnitude of transfers and contacts does not differ by frequency. However, the relative value to parents of the magnitude versus the frequency of a transfer is unclear: it may be that a parent derives more benefit from short, frequent visits than from longer, less-frequent ones.

Another concern is that analyzing transfers between parents and their entire set of children may not be ideal for addressing the question of returns on investments because parents may target specific investments to specific children, such as the first-born son or the youngest daughter, and may expect specific returns according to these investments. Respondents were asked child-specific information about some but not all economic transfers and not about instrumental assistance, limiting our ability to look within parents' investment portfolios at targeted investments. Still, sensitivity analyses using parent fixed-effects models with selected outcomes yielded consistent results: among a parent's children, those who received more education were more likely to provide gifts, those who receive economic transfers were more likely to visit, and those who resided in the parent-owned home and who received childcare were more likely to provide transfers and daily visits (available upon request). Further, there are benefits to the parent-aggregate analysis because it examines a parent's child investments portfolio. Although we are not able to assess whether specific investments are reciprocated, our approach does tell us about the overall returns on parents' investments in their children from the perspective of a parent surveying the results of lifelong investments in children.

Parent-child support in Egypt may be affected by broader exchanges within kin networks. Although we controlled for some ties with extended kin, our available measures may not fully capture all kin exchanges. Although the prevalence of kin ties is high, indicators of extended kin ties are not significantly associated with most forms of assistance received by parents from their children, and their inclusion in models does not significantly alter estimates of

the relationship between parental investments and assistance received from children. Analyses stratified by closeness of kin (available upon request) provided limited evidence that returns on some parental investments may be different in families with strong extended kin ties. Most notably, in these families, the number of surviving children is more strongly associated with assistance to parents; however, the negative associations between children's marital status and assistance to parents are weaker, suggesting stronger intergenerational obligations in these families. A priority for scholars will be to collect data that explicitly facilitate examining intergenerational support within the context of the kin network.

Our findings corroborate theories and previous evidence that although children do provide support in later life, transfers tend to be downward (Yount et al. 2012). We argue that what matters in terms of returns on investments is not whether children fully repay their parents but whether parents are satisfied with what they receive from their children. There is indirect evidence that parents were satisfied, which would imply that Egyptian parents of the transition generation do feel that investments in their children paid off. When asked about their satisfaction with their income, most respondents (88 %) reported that they were satisfied, although this percentage was somewhat lower among those who depended on their children for income compared with those who have other sources (86 % vs. 92 %). Similarly, most respondents reported being satisfied with their living arrangements, with minimal differences between those living with their children, regardless of who owned the home, compared with those in other arrangements (98 % vs. 97 %). These relationships did not differ with the level of disability of the older adult.

Our findings suggest that children collectively are responsive to the investments that parents have and continue to make in them, with investments in quantity and recent support associated with returns more than investments in education or marriage. Parents generally receive limited support from their children, but in this part of Egypt, we did not observe a crisis of support for older adults. Parents had ways of motivating assistance, in part by providing for children's housing and financial needs. The investment strategies that worked for these older parents (large families and close proximity to children) may not engage support from children for future older parents who invest even more in fewer children. The nature of transitions in family support in Egypt and other poorer settings has yet to be seen. In the United States and Europe, reductions in family size have occurred alongside improvements in the health and wealth of the older population, leading to more years of independent living with affective and instrumental support from children but to less financial dependence. If these observations are a guide, old-age security can be sustained by smaller sets of children providing support, with complementary formal support mechanisms to help maintain quality of life for aging populations in Egypt and other settings.

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## Appendix

**Table 5** Odds that older respondent receives economic support, visits or instrumental assistance during the last year, associated with investments in childbearing indicated by children ever born: Results from survey-adjusted logistic regression, Ismailia, Egypt ( $n = 903$ )

Parental Investments	Children Are a Primary Source of Income	Receives Gifts or Money From Children	Receives Assistance With Domestic Chores	Receives Assistance With Transactions & Communication	Receives Assistance With ADLs	Nonresident Children Visit Daily
Childbearing						
Number of children ever born	1.03 (0.03)	1.03 (0.03)	1.06 (0.04)	1.02 (0.02)	1.03 (0.06)	1.12** (0.04)

*Notes:* Models control for respondent's characteristics (gender, age, marital status, urban versus rural residence, household standard of living, years of school completed, work status at age 50, number of ADL limitations, MMSE score, and indicators of extended kin ties), children's characteristics (average age and gender composition), and indicators of subsequent investments in children. Linearized  $t$  statistics are shown in parentheses.

\*\* $p \leq .01$



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