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Living Conditions of Children and Parental Well-Being : Evidence from German Data on Life Satisfaction

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IZA DP No. 1200

Living Conditions of Children and Parental Well-Being – Evidence from German Data on Life Satisfaction

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July 2004

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

Living Conditions of Children and Parental Well-Being – Evidence from German Data on Life Satisfaction

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Discussion Paper No. 1200
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ABSTRACT

Living Conditions of Children and Parental Well-Being – Evidence from German Data on Life Satisfaction*

The question that this paper addresses is whether or not parents are altruistic towards their children. A new approach will be introduced, where the life satisfaction data of parents will be regressed onto the living conditions of their children who now live independently. After controlling for unobserved household characteristics, no positive effect of children's actual household income on parents' satisfaction can be found. However, children's health and education have a positive impact on parental well-being. Both can be interpreted as an approximation of children's lifetime incomes. We also regress parental life satisfaction on the predicted life satisfaction of their children. A significant positive effect can be found, which can be interpreted as weak evidence for parental altruism. The paper uses data from the German Socio-Economic Panel Study (SOEP).

JEL Classification: C25, D13, D64, I19, I31

Keywords: family, altruism, life satisfaction, health and random effects

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1 Introduction

Aging societies in Europe confront ongoing discussions about reforming social security systems by using more private resources. Private intergenerational transfers of income, wealth and in-kind services may play an important part in reforming old age security, long-term care and social assistance. If families are altruistically linked, the pooling of resources within the family allows for a redistribution of income among members and provides insurance against risks. Therefore, it is interesting to research the incentives for intergenerational transfers and make systematic use of them in public policy.

Intergenerational transfers from parents to children and vice versa are discussed extensively in economic theory (Becker, 1991, Laferrére and Wolff, 2004). From a theoretical point of view, it is important to ask what kind of motives drive intergenerational transfers. Voluntary transfers may be motivated by either altruism or exchange (Stark, 1995, Barro, 1974). They show that in the case of altruistic bequests, attempts by government to redistribute income between generations are fully neutralized. However, the opposite redistribution of income may have sizeable effects if bequests are driven by exchange.

The majority of empirical papers on this topic estimate interhousehold transfer equations where the amount of transfer from parents to children is regressed on the parents' income and income of the child together with other variables. Subsequently, tests can be set up to verify predictions from the model of altruistic families. However, this approach requires specific data on transfer payments between family members. In this paper, the linkage between parents and their children is analyzed using data on parental life satisfaction from the German Socio-Economic Panel Study (SOEP).

Section 2 considers some theoretical arguments and empirical strategies for testing altruism within the family. The data and the econometric model are discussed in Section 3. The results are presented in Sections 4 and 5. Section 6 concludes.

2 Testing altruism within the family

A basic approach to modeling altruistic links between parents and their children can be found in Becker (1991), Altonji et al. (1992) and Stark (1995). Let subscripts *p* and *k* denote the parent and the child respectively. If the parent is altruistic, his/her utility, *Z*, is an increasing function of personal consumption, C_p and of the child's utility, *V*. Let us further assume that

the child is selfish, that is, his/her utility depends only on personal consumption, C_k.[1] In the case of separable utility, the parental utility function becomes:

$$Z = U(C_p) + \eta V(C_k) \tag{1}$$

where $\eta \in [0,1]$ represents altruism as a weight the parent places on the utility of his/her children. If income Y_p and Y_k are treated as exogenous parental consumption becomes $C_p = Y_p - T$, where T is an altruistic transfer to the child. Consequently, a child's consumption can be written as $C_k = Y_k + T$. Since $Y_p + Y_k = C_p + C_k$, parent and child obviously pool their resources to finance consumption.

The parent chooses transfer payment T in a way that it maximizes $Z = U(Y_p - T) + \eta V(Y_k + T)$. The necessary condition:

$$\frac{\partial U(C_p)}{\partial C_p} = \eta \frac{\partial V(C_k)}{\partial C_k} \tag{2}$$

equalizes the parent's marginal utility of consumption with the child's marginal utility of consumption as it is perceived by the parent. One interesting result from the altruistic model is that family members can afford to take more risks because the pooling of resources within the family serves as an insurance mechanism. Another interesting point was first made by Barro (1974). If family members are altruistically linked, public transfer programs bring little change to income distribution because individuals will adjust their private transfer payments and neutralize the program's effects.

Most empirical studies build on another interesting implication, which can be derived from the model:

$$\frac{\partial T}{\partial Y_p} - \frac{\partial T}{\partial Y_k} = 1. \tag{3}$$

This condition implies, assuming the parent's consumption is a normal good, that the transfer amount is negatively correlated with the child's income. Moreover, reducing the parent's income by one Euro and increasing the child's income by the same amount reduces

[1] Stark (1995) discusses a model where all family members are altruistic.

the transfer by one Euro. Otherwise, a positive relationship between the amount transferred and the child's income is only consistent with the exchange motive (Cox, 1987).

As Laferrére and Wolff (2004, p. 70) claim, "The models are simplistic. However, with simple specifications, they provide different predictions, that are testable to a certain extent." Thus, several empirical studies use the implications of the simple model to test whether families are altruistically linked. Using microdata that provide information on private transfer payments, interhousehold transfer equations are estimated. Tests can be performed subsequently to verify whether these theoretical implications are valid. Because of liquidity constraints and uncertainty (Altonji et al., 1997) or inherited habits (Jellal and Wolff, 2002), several extensions to this simple model were made. In addition, elaborated econometric methods are used to control for unobserved heterogeneity of the family.

The existing empirical literature does not give a clear answer as to whether families are altruistic linked (see Laferrére and Wolff, 2004). Moreover, the strong requirement on altruism formulated in equation (3) was not supported by the data. For Germany, some studies based on the data from the German Socio-Economic Panel Study (SOEP), for example, Bhaumik (2001) and Croda (2000), find evidence for altruism, Jürges' (1999) results do not support the thesis.

However, several problems regarding the data remain. As indicated by Altonji et al. (1992), the timing of transfers is arbitrary, so that studies that are not able to cover a long period may lead to incorrect conclusions. In addition, many forms of transfers cannot be measured by money income, such as the transfer of services and of household produced goods. Although some of these problems can be solved by using panel data, other problems still remain.

An alternative way to analyze altruism within the household is to use a direct measure for parental well-being, Z. This could be done by analyzing data on satisfaction. Life satisfaction or happiness data have been used more frequently by economists in recent years to study a variety of issues (Frey and Stutzer, 2002). The existing work shows that life satisfaction is a valid measure of individual well-being, which is closely linked to the concept of utility used by economists.

In this paper, satisfaction with life is used to analyze the linkages between parents and their children. To test whether or not parents are altruistic regarding their children, a straightforward test can be conducted using results from the above model:

$$\frac{\partial Z}{\partial Y_k} = \eta \frac{\partial V(Y_k + T)}{\partial Y_k} = \eta V'(Y_k + T) \tag{4}$$

where V' is the marginal utility of a child's consumption, which should clearly be positive. Thus, equation (4) is positive as long as the parent is altruistic ($\eta > 0$). It should be noted that this remains independent of whether a transfer payment from parents to children can be observed in the data. However, it should also be noted that, from an empirical point of view, equation (4) is a necessary but not a sufficient condition for parental altruism. Even nonaltruistic parents may be interested in their child's income if they expect support from them.

Besides this simple test of economic theory, the satisfaction approach allows us to analyze the impact of children's living conditions on parental well-being in broader senses, such as education and health.

3 Data and estimation strategy

The data come from the German Socio-Economic Panel Study (SOEP). The SOEP is a representative longitudinal microdata base that includes a wide range of socioeconomic information on randomly selected households in Germany. The first set of data was collected from approximately 6,000 families in the western states in 1984. After German reunification in 1990, the SOEP was extended to include about 2,200 families from the eastern states.[2] At present the SOEP has 24,000 respondents from 14,000 households.

Since the SOEP began in 1984, many children have moved from their parents' households to live in their own household, alone or together with a partner and their own children. An important feature of the SOEP has been to trace personal movements. New households founded by persons who moved from an original panel household become members of the SOEP sample. The SOEP also provides information to link independent children with households as well as personal information on their mothers and fathers. The longer that the SOEP lasts the greater is the probability of finding parents who can be linked to their children outside the household. Thus, the recent wave of the SOEP from 2002 can be used to construct a dataset. This dataset has a pooling characteristic, because parents can be a multiple part of the dataset if they have more than one child living outside the household and are SOEP

[2] The SOEP data used in this study are available as a 'scientific use' file (see Wagner et al., 1993). For further information, please contact the German Institute for Economic Research (DIW), Berlin: http://www.diw.de/soep/.

respondents. However, it should be noted that in such instances, it is not possible to distinguish between biological and nonbiological children.

The SOEP provides a wide range of socioeconomic variables on households and persons. The concept of satisfaction is central to this paper. Each respondent is questioned on their life satisfaction: '*How satisfied are you with your life, all things considered?'* Please answer according to the following scale: '0' means completely dissatisfied, '10' means completely satisfied'.

The model to be estimated has the following structure:

$$S_{ih}^{*} = x_{ih}'\beta_1 + y_{ih}'\beta_2 + x_{ihk}'\beta_3 + y_{ihk}'\beta_4 + \alpha_h + \varepsilon_{ih}\,. \tag{5}$$

S_{ih}^{*} is the latent subjective well-being of mother or father, *i*, belonging to family *h*. S_{ih}^{*} is measured as satisfaction with life S_{ih} on the scale described above. Subjective well-being can be explained by a vector of individual characteristics, x_{ih}, and by information on personal income, y_{ih}, as in a standard method of econometric research on life satisfaction (Frey and Stutzer, 2002). The model here is extended by information about children's living conditions, x_{ihk}, and their income situation, y_{ihk}, where *k* denotes the number of the child. The index *h,* characterizes the common household of parents and children before they moved out. Thus *h* is a family index. The coefficient vectors to be estimated are denoted by β. α_h is an unobservable family-specific effect that does not vary between persons within the family (Winkelmann, 2004). ε_{ih} is the usual white noise error term.

The appropriate econometric method to estimate the parameters of the model is an ordered probit model (Greene, 2000). As proposed by Winkelmann (2004), unobserved heterogeneity shared by the family members is index *h* in equation (5), and can be treated as a random effect. One way to deal with family-dependent heterogeneity is to estimate a random effects ordered probit model. The crucial assumption is that the unobserved family-specific effect has to be treated as independent from the explanatory variables in the model. In this case $\rho = \sigma_\alpha^2 / (\sigma_\alpha^2 + 1)$, is the proportion of the total variance contributed by the family-specific variance component.[3]

[3] The variance σ_ε^2 is normalized to 1. Please note that no panel data are necessary to estimate the model, because the family-specific variance component can be estimated by using the variance within families. However, panel data would allow controlling for unobserved individual heterogeneity in a two-component

Another way to estimate the model is to obtain a robust variance estimate that adjusts for within-cluster correlation, where the cluster is the family. If the observations within the cluster may not be treated as independent, but the clusters themselves are independent, robust estimates of standard errors can be obtained from an extension of the Huber/White-sandwich robust estimator of variance (Rogers, 1993, Wooldridge, 2002).[4]

For parents, the following characteristics, which have been discussed in the literature as potential determinants of life satisfaction, are included in all regressions: age, age squared, health, gender, nationality, years of education, marital status, whether widowed, whether divorced, household size, number of children, place of abode, employment status, and income. Health is measured by a self-rating of the respondents on a five point scale. As several studies have shown, self-rated health is a valid indicator for the objective health status of respondents (Idler and Benyamini, 1997; for Germany, Schwarze et al., 2000). Income is measured as the disposable monthly income of the household (pre-government income). The logarithm of household income is used together with the logarithm of household size to control for economies of scale. Compared to an arbitrarily chosen equivalence scale, this specification is more flexible in accounting for size effects (Schwarze, 2003). Further, the number of children still living in parental households as well as the number of children who have moved out are included in the regression.

Information for children not living in the parents' household are: age, gender, marital status, health, education, employment status, and household income. All these variables are computed as described above. In addition, a measure of distance was created. The distance between a parent and his/her child is important in two ways. First, the distance itself might influence parental well-being. Second, the distance can serve as a measure of information. The greater the distance between the households, then the less accurate might be the information that parents have about the living conditions of their children. Because it is not possible to calculate the exact distance between two households in the SOEP program, a proxy measure was used. For each household in the SOEP, the regional location, e.g., the county (Kreis) is known. The 438 counties are numbered from northwest to southeast (Bundesamt für Bauwesen und Raumordnung, 1999). Thus, as a measure of distance between the location of the parents' and a child's household, the absolute value of the difference

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random-effects probit model (see Winkelmann, 2004). The model is estimated using STATA 8.0 and the module 'REOPROB' written by Guillaume R. Frechette (see http://www.econ.ohio-state.edu/frechette/html/econ.htm).

[4] The robust calculation is straightforwardly generalized by substituting the meat of the sandwich with a matrix formed by taking the outer product of the cluster-level scores, where within each cluster the cluster-level score is obtained by summing the observation-level scores (see Rogers, 1993, for details).

between the two counties is computed.[5] The higher the value, the greater the distance between parents and children.

The SOEP also provides information on interhousehold transfer payments. However, it is not possible to link a transfer payment made by a father or a mother to a specific child. Thus, only information as to whether parents have made a transfer to a child will be included in the model.

Table 1: Structure of the data set

Children not living in parents household	Number of Parents		Mother's	Father's	Number of observations	
	Frequency	Percent	Frequency	Frequency	Frequency	Percent
One	1,315	75.1	707	608	1,315	58.0
Two	365	20.8	200	165	730	32.2
Three	61	3.5	33	28	183	8.1
Four	7	0.4	4	3	28	1.2
Five	2	0.1	1	1	10	0.4
Total	1,750	100	945	805	2,266	100
Parents sharing the same household background	1,464	83.6	-	-	-	-

Source: SOEP 2002.

Table 1 depicts the structure of the dataset from the parents' point of view. The basis is 1,750 parents for whom information on up to five children not living in the same household was found in the SOEP. For 1,315 parents, information on one child not living in the same household can be found. A total of 365 parents have two children, thus these cases are doubled. Altogether, the dataset consists of 2,266 observations. From the total of 1,750 parents, 1,464 or 84 percent were sharing the same household background, meaning that they lived together in the same household when their children were young.

Table 2 provides some descriptive information on the variables used in the estimation. Parents are on average 58 years of age, children's ages are 30 years on average. Parents have on average 2.2 children of whom, on average, two are not living in the parental home.

4 Children's living conditions and parental satisfaction: Estimation results

Before the estimates from the pooled dataset are presented, a model where the life satisfaction of parents is regressed on parents' own characteristics only will be discussed. This estimation is based on 1,750 fathers and mothers. Table 3 depicts results estimated by a clustered ordered

[5] According to data protection rules, all work using the county information has to be carried out at the DIW Berlin. We thank the staff of the DIW for making this information available to us.

probit and a random-effects ordered probit. As can be seen, the results do not differ substantially between each other.

Table 2: Descriptive information

	Mean	Standard Deviation
Satisfaction with Life	6.61	1.82
West German	0.48	0.50
East German	0.25	0.44
Female	0.54	0.50
Age	58.00	8.47
Bad health	2.98	0.88
Married	0.83	0.38
Widow/Widower	0.08	0.27
Years of education	11.07	2.36
Unemployed	0.09	0.28
Self employed	0.04	0.20
Retired	0.34	0.48
Own house	0.55	0.50
Log family income	8.27	0.52
Log family size	0.80	0.38
Number of children	2.19	1.27
Number of children abroad	2.05	1.09
Transfer to children	0.16	0.36
C: Distance	26.72	72.72
C: Same county	0.66	0.48
C: Female	0.51	0.50
C: Age	30.67	5.94
C: Bad health	2.27	0.82
C: Married	0.47	0.50
C: Divorced	0.04	0.19
C: Child	0.45	0.50
C: Years of education	12.41	2.51
C: Unemployed	0.06	0.24
C: Trainee	0.04	0.19
C: Own house	0.26	0.44
C: Log family income	8.19	0.56
C: Log family size	0.76	0.54

Note: C: indicates information from children's household.
Number of observations: 2,266.
Source: SOEP 2002.

Most of the results are in accordance with previous findings from the literature on subjective well-being. However, the effect of age on life satisfaction is not u-shaped as found in most other studies. It needs to be noticed that parents are on average 58 years old. Thus, what is measured here is the upper tail of the u-shaped age curve. East German parents are significantly less satisfied with their life compared to nonnative Germans, who serve as the reference group. The effect of gender is small and can be found in the random-effects ordered probit only. Mothers are more satisfied with their life than fathers, as married parents are more satisfied than the nonmarried. Bad health (as measured by the self-rated health scale) is a strong predictor for life satisfaction. Living in an owned house or dwelling increases life

Table 3: Parents well being without children's information

	Ordered probit, clustered	Random effects ordered probit
West German	0.0095	0.0160
	(0.0787)	(0.1122)
East German	-0.4136***	-0.6302***
	(0.0843)	(0.1248)
Female	0.0678	0.0983*
	(0.0412)	(0.0579)
Age	0.0781**	0.1104**
	(0.0359)	(0.0490)
Age squared	-0.0006*	-0.0008*
	(0.0003)	(0.0004)
Bad health	-0.6152***	-0.8022***
	(0.0357)	(0.0435)
Married	0.1976*	0.2631*
	(0.1054)	(0.1577)
Widow/Widower	0.0472	0.0105
	(0.1238)	(0.1822)
Years of education	-0.0107	-0.0005
	(0.0134)	(0.0176)
Unemployed	-0.1717	-0.1951
	(0.1061)	(0.1260)
Self	-0.2092	-0.2167
	(0.1289)	(0.1671)
Retired	0.0919	0.0111
	(0.0801)	(0.1030)
Own house	0.1558**	0.2104**
	(0.0640)	(0.0922)
Log family income	0.4122***	0.6091***
	(0.0756)	(0.1060)
Log family size	-0.4385***	-0.6590***
	(0.1387)	(0.1920)
Number of children	0.1434*	0.2263**
	(0.0848)	(0.1039)
Number of children abroad	-0.1345	-0.2205**
	(0.0841)	(0.1094)
Transfer to children	0.0987	0.0191
	(0.0795)	(0.1028)
ρ	-	0.5423***
Log-likelihood	-3,071.2	-2,966.7

Number of Observations: 1,750
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: SOEP 2002.

satisfaction. Life satisfaction increases strongly and significantly with household income. The negative effect of log family size serves as a corrector for economies of scale (Schwarze, 2003). Life satisfaction also increases with the total number of children. However, children not living in the parental home have a negative impact on parental life satisfaction. A transfer giving to a child has no significant impact on life satisfaction. Considering the estimated ρ, it can be shown that nearly 55 percent of the total variance can be attributed to unobserved intrafamily heterogeneity. This result is in accordance with Winkelmann's (2004) findings.

The estimation results from the pooled dataset are shown in Table 4. Regarding individual parental characteristics, there are no substantial differences compared to the model in Table 3. In addition, this model includes characteristics of the children. Only a few of the living conditions of children affect parental life satisfaction in a significant manner.

First, child household income has no significant effect on parental life satisfaction. To check the robustness of this result, different specifications of the income variables were tested. They are not shown here. It might be that parents judge children's income relative to their own income. Thus, an interaction effect between parents and children's income was included in the regressions. The interaction effect turns out to be significantly negative and indeed in some models the sign of children's household income becomes significantly positive. However, after testing the common effects of both variables, the hypothesis that children's income has a positive effect on parental life satisfaction has to be rejected. When different specifications of comparison income were tested, no significant effects were found.

A strong interpretation of these results would lead to a rejection of the thesis that parents are altruistic. However, monthly household income only serves as a 'snapshot' of children's economic conditions. Education may serve as a better predictor for present and future resources available for children. Indeed, parental life satisfaction increases with a child's years of education. However, the effect is not significant in the random-effects ordered probit model.

Another predictor for future economic well-being is health. Child health status has a significant effect on parental life satisfaction. The worse the health status of the child, the less satisfied are the parents. This result itself may not be surprising. However, note that health status is measured by self-rated health. Thus the result gives further evidence for the thesis that self-rated health is a valid measure of the objective health status.

It may well be that fathers' and mothers' well-being is related to their children's living conditions in a different way. Thus, separate estimations for fathers and mothers were carried out. Table 5 depicts these results. It should be noted that neither model can be estimated by a

Table 4: Parents well being and children's living conditions

	Ordered probit, clustered	Random effects ordered probit
West German	0.0024	0.0124
	(0.0899)	(0.1318)
East German	-0.3828***	-0.6931***
	(0.0966)	(0.1472)
Female	0.0581	0.1286**
	(0.0444)	(0.0551)
Age	0.1009***	0.1865***
	(0.0373)	(0.0515)
Age squared	-0.0008**	-0.0014***
	(0.0003)	(0.0004)
Bad health	-0.6144***	-0.8743***
	(0.0379)	(0.0424)
Married	0.2702**	0.3012*
	(0.1116)	(0.1706)
Widow/Widower	0.0472	-0.0619
	(0.1265)	(0.1972)
Years of education	-0.0221	0.0162
	(0.0138)	(0.0185)
Unemployed	-0.1425	-0.2044*
	(0.1025)	(0.1210)
Self	-0.2017	-0.2333
	(0.1342)	(0.1567)
Retired	0.1487*	0.0175
	(0.0881)	(0.0959)
Own house	0.1515**	0.2402**
	(0.0735)	(0.1080)
Log family income	0.4418***	0.7522***
	(0.0819)	(0.1196)
Log family size	-0.5529***	-0.8500***
	(0.1434)	(0.1976)
Number of children	0.1804**	0.3081**
	(0.0844)	(0.1288)
Number of children abroad	-0.1222	-0.2923**
	(0.0869)	(0.1303)
Transfer to children	0.1430*	-0.0639
	(0.0853)	(0.1064)
C: Distance	-0.0006	-0.0007
	(0.0004)	(0.0006)
C: Same county	-0.0435	0.0026
	(0.0673)	(0.0912)
C: Female	-0.0188	-0.0422
	(0.0539)	(0.0739)
C: Age	-0.0030	-0.0064
	(0.0083)	(0.0102)
C: Bad health	-0.0910***	-0.0938**
	(0.0325)	(0.0458)
C: Married	0.0631	0.0362
	(0.0753)	(0.1135)
C: Divorced	-0.0257	0.0421
	(0.1282)	(0.2054)
C: Child	0.1050	0.0485
	(0.1053)	(0.1415)
C: Years of education	0.0248**	0.0251
	(0.0121)	(0.0174)
C: Unemployed	0.0123	-0.0928
	(0.1007)	(0.1587)
C: Trainee	-0.2046	-0.1735

	(0.1295)	(0.2215)
C: Own house	0.0630	0.0692
	(0.0783)	(0.1006)
C: Log family income	-0.0808	-0.1362
	(0.0791)	(0.1033)
C: Log family size	-0.1494	-0.0641
	(0.1165)	(0.1579)
ρ	-	0.6650***
Log-likelihood	-3,960.4	-3,598.2

Note: C: indicates information from children's household.
Number of observations: 2,266
Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: SOEP 2002.

Table 5: Father's and mother's well being

	Fathers	Mothers
	Ordered probit, clustered	Ordered probit, clustered
West German	0.0899	-0.0743
	(0.1149)	(0.1012)
East German	-0.2858**	-0.4679***
	(0.1184)	(0.1123)
Age	0.1024**	0.0822
	(0.0516)	(0.0503)
Age squared	-0.0008*	-0.0006
	(0.0004)	(0.0004)
Bad health	-0.6771***	-0.5765***
	(0.0544)	(0.0470)
Married	0.2572	0.2797**
	(0.1569)	(0.1380)
Widow/Widower	0.0375	0.0498
	(0.2191)	(0.1481)
Years of education	-0.0296	-0.0106
	(0.0186)	(0.0193)
Unemployed	0.0442	-0.2845**
	(0.1584)	(0.1349)
Self employed	-0.2218	-0.1828
	(0.1664)	(0.1945)
Retired	0.2017*	0.1275
	(0.1219)	(0.1326)
Own house	0.1219	0.1821**
	(0.0914)	(0.0857)
Log family income	0.4457***	0.4315***
	(0.1103)	(0.0939)
Log family size	-0.5756***	-0.5193***
	(0.1789)	(0.1794)
Number of children	0.1735*	0.1852**
	(0.1049)	(0.0916)
Number of children abroad	-0.0827	-0.1489
	(0.1056)	(0.0978)
Transfer to children	0.2348**	0.0941
	(0.1059)	(0.1059)
C: Distance	-0.0002	-0.0008*
	(0.0005)	(0.0005)
C: Same county	0.0549	-0.1138
	(0.0831)	(0.0766)

C: Female	-0.0038	-0.0289
	(0.0670)	(0.0615)
C: Age	-0.0036	-0.0030
	(0.0098)	(0.0100)
C: Bad health	-0.0910**	-0.0968**
	(0.0391)	(0.0383)
C: Married	0.1266	0.0117
	(0.0933)	(0.0874)
C: Divorced	0.0843	-0.1068
	(0.1687)	(0.1584)
C: Child	0.1018	0.1294
	(0.1321)	(0.1253)
C: Years of education	0.0353**	0.0166
	(0.0156)	(0.0142)
C: Unemployed	0.0323	-0.0026
	(0.1240)	(0.1195)
C: Trainee	-0.2950*	-0.1273
	(0.1682)	(0.1437)
C: Own house	0.0952	0.0304
	(0.0993)	(0.0858)
C: Log family income	-0.0874	-0.0752
	(0.0934)	(0.0899)
C: Log family size	-0.2221	-0.1030
	(0.1439)	(0.1378)
Log-likelihood	-1,765.9	-2,171.5
Observations	1039	1227

Note: C: indicates information from children's household.
Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: SOEP 2002.

random-effects ordered probit, because the intrahousehold specific variance is too small when estimating fathers and mothers separately.

If we first consider the parents' own characteristics, some differences between fathers and mothers can be observed. Age has no significant effect on a mother's life satisfaction. Note, however, that the sample sizes for both fathers and mothers are small. Unemployment decreases a mother's life satisfaction significantly, whereas no effect is found for fathers. Turning to children's characteristics, the distance between parents and a child's household decreases the life satisfaction of a mother significantly. This may possibly be interpreted as the result of the cost of mobility. As in the common model, children's health has a strong impact on both mothers' and fathers' life satisfaction. The effect of children's education can only be observed on fathers. Again, no significant effect was found for children's present household income.

5 Parental life satisfaction and children's well being

Are parents altruistic with respect to their children? Although we have found a positive relationship between children's health and education and parental life satisfaction, this

question cannot be unambiguously answered. Health and education can serve as an approximation of future income. If parents took some investment in children's education when they were young, they can expect some returns when they become older. Thus, a positive impact of children's education on parental life satisfaction can also be driven by an exchange motive.

Another and more direct test of altruism is to regress parental life satisfaction onto the life satisfaction of their children. However, such an approach suffers from various problems of endogeneity. First, the life satisfaction of children cannot be treated exogenously, especially if children are also altruistic towards their parents. This would lead to a simultaneous model. However, this requires further research, and is beyond the scope of this paper. An alternative approach would be to employ a 2SLS/IV estimator. However, there is no ready IV estimator for nonlinear models.

Nevertheless, a first approach should be presented here. To avoid part of the endogeneity problem, a "reduced form" equation for children's satisfaction can be estimated. The result can be used to predict children's life satisfaction depending on their own characteristics. In the second step, parents' life satisfaction can be regressed on their children's predicted satisfaction. The linear prediction of children's life satisfaction used here can be interpreted as the predicted latent variable behind observed life satisfaction.

The results of the estimated reduced form equation for children's life satisfaction are depicted in Table 6. The results are more or less in accordance with recent literature. Although the age effect on satisfaction is u-shaped for children, this is not significant. Table 7 shows the results for parental life satisfaction with the predicted life satisfaction of their children. In the random-effects ordered probit model (Table 7, second column), predicted life satisfaction has a positive effect on parental life satisfaction at a 10 percent significance level.

In an alternative specification, an interaction term between distance and predicted children's life satisfaction will be included. A negative sign can be expected if parents value the well-being of their children less when their distance from them increases. The results are depicted in the third column of Table 7. The sign of the interaction effect is negative but not significant. However, the variable distance now becomes significantly negative. In addition, the positive impact of children's predicted life satisfaction is stronger now and is significant at a 5 percent level. In all, these results might be interpreted as being weak evidence for parental altruism.

Table 6: "Reduced form" estimation of children's life satisfaction

	Ordered probit, Clustered	Random effects ordered probit
West German	0.0230	-0.0136
	(0.0812)	(0.1302)
East German	-0.2299***	-0.4555***
	(0.0877)	(0.1445)
Female	0.0109	-0.0285
	(0.0638)	(0.0751)
Age	-0.0651	-0.0143
	(0.0430)	(0.0658)
Age squared	0.0005	-0.0007
	(0.0006)	(0.0010)
Bad health	-0.5564***	-0.8448***
	(0.0434)	(0.0527)
Married	0.2483***	0.0188
	(0.0870)	(0.1184)
Divorced	-0.1667	-0.5065**
	(0.1255)	(0.2158)
Years of education	0.0216	0.0232
	(0.0137)	(0.0177)
Unemployed	-0.6457***	-1.2046***
	(0.1313)	(0.1641)
Self employed	-0.2478*	-0.5432***
	(0.1354)	(0.1810)
Trainee	0.2773	0.3466
	(0.1919)	(0.2333)
Own house	0.2304***	0.3504***
	(0.0796)	(0.1032)
Log family income	0.2220**	0.3069***
	(0.0892)	(0.1060)
Log family size	-0.0853	0.1872
	(0.1284)	(0.1614)
Child	-0.0297	-0.1674
	(0.1130)	(0.1478)
ρ	-	0.6819***
Log-likelihood	-3,708.2	-3,363.2

Number of observations: 2264
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: SOEP 2002.

Table 7: Parents life satisfaction with children's satisfaction predicted

	Ordered probit, clustered	Random effects ordered probit	Random effects ordered probit
West German	0.0066	0.0026	-0.0009
	(0.0885)	(0.1326)	(0.1327)
East German	-0.3256***	-0.6403***	-0.6481***
	(0.0928)	(0.1502)	(0.1486)
Female	0.0642	0.1326**	0.1330**
	(0.0434)	(0.0542)	(0.0542)
Age	0.0992***	0.1806***	0.1845***
	(0.0378)	(0.0513)	(0.0513)
Age squared	-0.0008**	-0.0013***	-0.0013***
	(0.0003)	(0.0004)	(0.0004)
Bad health	-0.6151***	-0.8811***	-0.8816***
	(0.0377)	(0.0424)	(0.0424)
Married	0.2626**	0.3116*	0.3107*
	(0.1121)	(0.1719)	(0.1706)
Widow/Widower	0.0186	-0.0950	-0.0942
	(0.1255)	(0.1998)	(0.1999)
Years of education	-0.0173	0.0173	0.0176
	(0.0135)	(0.0183)	(0.0182)
Unemployed	-0.1442	-0.1963	-0.1956
	(0.1025)	(0.1210)	(0.1206)
Self employed	-0.2172	-0.2332	-0.2310
	(0.1339)	(0.1558)	(0.1558)
Retired	0.1461*	0.0300	0.0295
	(0.0871)	(0.0957)	(0.0955)
Own house	0.1651**	0.2560**	0.2553**
	(0.0706)	(0.1069)	(0.1062)
Log family income	0.4398***	0.7550***	0.7505***
	(0.0823)	(0.1179)	(0.1172)
Log family size	-0.5498***	-0.8524***	-0.8477***
	(0.1436)	(0.1981)	(0.1974)
Number of children	0.1918**	0.3017**	0.2992**
	(0.0842)	(0.1261)	(0.1239)
Number of children abroad	-0.1399	-0.2955**	-0.2965**
	(0.0873)	(0.1297)	(0.1283)
Transfer to children	0.1354	-0.0627	-0.0563
	(0.0831)	(0.1054)	(0.1054)
C: Distance	-0.0006	-0.0007	-0.0014*
	(0.0004)	(0.0006)	(0.0008)
C: Same county	-0.0362	0.0190	0.0148
	(0.0654)	(0.0902)	(0.0901)
C: Life satisfaction (predicted)	0.0661**	0.0801*	0.1606**
	(0.0299)	(0.0431)	(0.0727)
C : Distance*Life satisfaction	-	-	-0.0009
			(0.0008)
ρ	-	0.6690***	0.6689***
Log-likelihood	-3,966.9	-3,597.5	-3,596.7

Number of observations: 2264
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Source: SOEP 2002.

6 Conclusions

This paper was designed to introduce a new approach in studying how family members are linked to each other. The approach was demonstrated by linking children's living conditions to parental life satisfaction. In many ways, the results might be interpreted as weak evidence for parental altruism. Further research should use panel data to take into account unobserved individual heterogeneity. This is especially necessary because parents with more than one child are multiple members of the dataset.

The approach presented here can also be used to study children's life satisfaction with regard to parental conditions. However, this would need to systematically investigate the problem of endogeneity. Further research should address the question of simultaneous random-effects ordered probit estimations.

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