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Family Structure, Substitute Care, and Educational Achievement

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Abstract

Data from the National Longitudinal Survey of Youth are used to explore the educational achievement of youths who lived away from both biological parents for at least four months during childhood. The study focuses on those who spent some time in substitute care (in foster family care, living with relatives, or in institutions), those who left home to be on their own before age 17, and children who were adopted by a couple before age 2. Educational achievement is measured by high school completion, college completion, and highest grade completed by age 25. The 5 to 10 percent of youths in this study who experience surrogate forms of family care on average have lower educational achievement than those who grew up with both biological parents. The educational level of the parents appears to play an important role, and may explain a significant portion of this discrepancy. This study cannot sort out whether the differences in educational achievement reflect the types of youths who enter surrogate forms of care, the reasons for transitions, or the actual substitute care experiences. Its contribution is that it adds analysis of a nationally representative sample of youth to a very thin body of literature on substitute care.

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INTRODUCTION AND BACKGROUND

Many young adults, between 5 and 10 percent of the population studied here, have spent a portion of their childhood living away from both biological parents—in foster care, with relatives, in institutions, or on their own. How well did they fare as young adults, compared with those who had more traditional childhoods? Many adult outcomes could be used to answer this question. This paper focuses on educational achievement at age 25, largely because in our society educational attainment has historically been regarded as central to adult success and economic security, and recent analysis of the current baby-boom generation has pointed to increasing returns to education (Murnane and Levy, 1992).

Nationally representative data on individuals who spent part of their childhood in substitute forms of care are quite rare, as are data on adopted children. Most of the information on such children is anecdotal, incomplete, and based on small, unrepresentative samples. McDonald et al. (1993) offer a summary of the state of knowledge concerning the causes, correlates, and consequences of foster care. This paper and others using data from the National Longitudinal Survey of Youth (NLSY, a nationally representative sample of individuals born between 1957 and 1964) may add considerably to our knowledge about later outcomes among children who experienced out-of-home forms of care.

The term “substitute care” is used here to include children who lived with foster families, with relatives (“kinship care”), or in institutions (children’s homes, detention centers, etc.). Included also in the analysis are those who left home to be on their own by age 17 and those adopted by two parents before age 2. The data do not indicate whether the substitute forms of care were arranged through the child welfare system or voluntarily by the families involved.

Associations of such demographic variables as family background and structure, residential location, and other childhood experiences with later educational achievement and economic success are

well known. Children growing up in a two-parent family are more likely to attain higher levels of education and more economic security than children who lived with a single parent (see, for example, McLanahan and Sandefur, 1994; Haveman and Wolfe, 1994), but this research has generally ignored all living arrangements other than two-parent, parent-stepparent, and single parent. The question that this paper tries to address is: To what extent are childhood circumstances, most particularly living in surrogate family settings, net of other factors, associated with educational achievement of individuals when they become young adults?

Beginning with the Coleman Report (Coleman et al., 1966), a large body of research has explored how parents affect their children's later educational achievement. Recent studies have made important contributions as extensive longitudinal data have become available. Yet when I began thinking about the problem of living in foster care and away from one's parents, I was struck by the paucity of descriptive information or theory to guide my research. I could find no published national estimates of the probability of being in foster care during childhood. The conventional wisdom is that orphans, foster children, and adopted children are more likely to experience problems during adulthood, but little nationally representative research has been conducted in this area.[1]

Much of the existing family research deals with the effects of the more common family structures on children. Studies have compared intact, biological families with single-parent, divorced, and stepparent families, often lumping the remaining into an "other" category (e.g., see Wojtkiewicz, 1993b; Sandefur, McLanahan, and Wojtkiewicz, 1992.) This omission may be justified, given the relatively rare occurrence of substitute care and their small sample sizes in most data bases. On the other hand, the extreme vulnerability of these children urges us to try to fill the knowledge gap concerning this

[1]An exception is the finding by Piliavin, Westerfelt, and Elliot (1989), that more than one-third of a sample of homeless men in Minneapolis had been in out-of-home care in childhood. In my national sample, less than 6 percent experienced out-of-home placement.

group. It should be noted, however, that this paper does not address what accounts for the linkages, if any, between various family structure in which children grow up and their later achievements.

I could find few theories about how children's educational achievement might be affected by living in substitute care. The synthesis of McDonald et al. (1993) suggested that the following factors might be important: type of care (foster family, institution, etc.), age of onset (whether children were first placed when they were infants or adolescents), duration of placement, number of placements, and age of termination (whether children "aged out" of foster care into adulthood). Data from the National Longitudinal Survey of Youth permit me to examine most of these factors; however, after extensive testing I focused on the first factor: type of care.

In selecting variables I was confronted with difficulties in specifying the type of substitute care and the reason for entering it and by the small sample sizes. The NLSY has, for example, less than 100 cases for two groups: those who were in institutional care and those in foster family care. I chose the specification that seemed to provide the most information and had potential for statistical significance.[2]

Although I would have liked to distinguish the types of youths that went into substitute care from the impact of the experience of care on them, these two issues are almost impossible to disentangle. We only have several broad, self-reported response categories to questions about the reasons for leaving parents and no information on whether the child welfare system was involved in out-of-home placement.

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[2]I looked at the type of substitute care, the age at which the youth entered substitute care, and the number of years spent in substitute care. Given the small number of cases it was unreasonable to look at age of entry for each type of substitute care. I collapsed foster family, kinship, and institutional care into a single dummy variable, SUBCARE, and crossed it by four ages of entering: $\leq$ 5 years old, 6 to 11 years old, 12 to 14 years old, and 15 to 17 years old. The full regression model (Table 2, col. 7) with the care variables replaced with a single SUBCARE variable, had a coefficient of -0.18 ($t = 2.172$, $p < .05$). It was statistically significant, because the standard error was lowered by increasing the group size, but may not be policy significant, since it is hard to tell whether lowering average educational achievement by 0.2 of one year of education is policy relevant. When SUBCARE*AGE was introduced into the full model, the four coefficients showed little consistent pattern. The coefficients for SUBCARE*AGE (not shown) were insignificant and varied between +0.03 and -0.28. When a variable for years in substitute care was introduced, it was marginally positive and statistically insignificant. These findings for substitute care are consistent with those of Wojtkiewicz (1993a) regarding family type and its relationship to high school graduation.

What hypotheses or theories might help explain educational achievement disparities among those of differing family experiences? In choosing the control variables I drew upon hypotheses and theories concerning many economic, sociological and psychological factors. Human capital and economic deprivation theories stress the number of adults present and the economic and social resources available to the child (Becker, 1981). Socialization theory emphasizes parental supervision and parents as role models. Stress theory describes the detrimental psychological effects and timing of changes in family structure (McLanahan and Bumpass, 1988). Underclass theory incorporates the interaction of the family with the neighborhood, geographic concentration of problem families, and the changing nature of residence in urban central cities (Wilson, 1987). Some use family values, including religion, to explain familial influence. I drew upon a number of these theories, as indicated by the variables selected.

DATA AND VARIABLES

This analysis uses the National Longitudinal Survey of Youth, a nationally representative sample of about 12,000 men and women born between 1957 and 1964. Attrition from the survey and missing data lowered the number of observations in this study to 10,400.[3] The sample includes equal numbers of males and females, and oversamples blacks (2,730), Hispanics (1,790) and low-income families. The respondents were first interviewed in 1979, when they were 14 to 21, and were interviewed annually thereafter. The last year for which I have data is 1989, when they were 25 to 31. In 1988 they were asked

[3]The original NLSY sample included a subsample of low-income whites. Many researchers drop this subsample from their analyses because of possible problems with composition; for example, many were older and in their own households rather than living in their parents' household when the sample was selected. There are several ways to identify and omit this group. One way is to designate them with a special code. Another, suggested by Thomas MaCurdy (personal conversation) is to drop the older cohort, those born in 1957–1960. Dropping the designated group has problems because the weights have not been adjusted for this deletion, according to Dr. MaCurdy. Dropping the older group causes my sample size to be perilously small, particularly because of the relatively rare nature of my substitute care group. I ran regressions with the younger, smaller cohort. These regressions assured me that the entire sample was not distorted in regard to substitute care and the explanatory variables used in the analysis. As a result, I decided to use the full sample.

retrospective questions about their childhood. They were first asked whether they grew up in a two-parent family. If not, they were asked who they lived with and at what ages they made transitions in living arrangements. They were asked to describe every instance of being away from one or both parents for at least four months. (See Haurin, 1992, for a description of this NLSY supplement.)

The variables used in this study are fully described in the Appendix. The outcomes of interest, the dependent variables, are highest grade completed by age 25 and whether the respondent completed high school or college. The primary explanatory variables include adoption before age 2 (N = 111) and these substitute care arrangements (whether the youth experienced at least a 4-month spell before age 18): in an institution (detention, children's home, orphanage, group care home, or other institution; N = 90), with foster parents (N = 92), in the care of relatives (grandparents or other relatives, N = 607), on his or her own (on their own or living with friends) before age 17 (N = 140).

The following were used as control variables. *Family type variables* include whether the youth lived with both natural parents until age eighteen (the comparison group, N = 6,226), or lived with two parents at birth, but later separated from one or both of them because one parent died or was too ill to care for the youth, or the parents were divorced or separated, or for other reasons, including substitute care and being on own; or lived with one parent from birth until age eighteen (N = 448), or the parent later married, or left for other reasons, including substitute care and being on own.

Demographic variables include the number of children in the family, the year of birth, gender, race/ethnicity. *Residential variables* include the Census region, central city, rural, in public housing, if the person moved and at what age.

Parental background variables include father and mother's educational level, whether a mother or father worked, whether they worked as professionals or managers, whether they were born in the United States, whether the family received welfare in 1979, whether family income was below the

poverty level in 1979. *Attitudinal variables* include frequency of religious attendance and a locus of control scale.[4]

Variables indicating *parental problems* include alcoholic parents, parents who were abusive/neglectful, died, were too ill to care for child, divorced/separated, and whether the mother was a teen parent. Variables indicating *adolescent problems* include age when started drinking or using drugs, age when had contact with police, ever ran away from home, had health problems as a child, and whether females became teen mothers.

Variable descriptions, numbers of observations, and mean values used in the multivariate analyses described below are given in Appendix Table A.

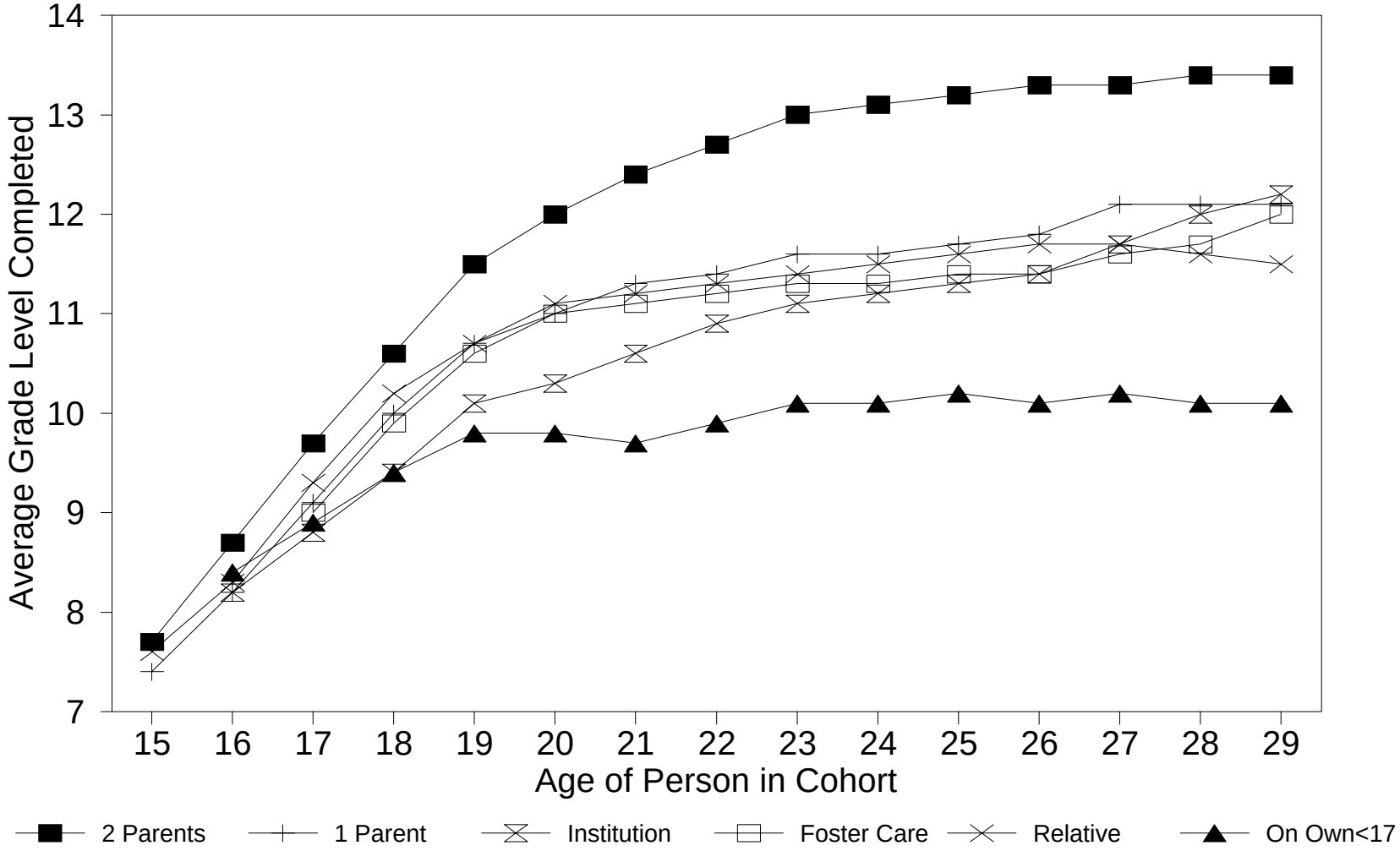
DESCRIPTIVE RESULTS

Figures 1 and 2 reveal the disparities in educational attainment and in high school completion among the various groups. The two-parent family is associated with higher educational attainment, and living on one's own is the lowest. The other groups show very similar rates between the two extremes.

Table 1 provides descriptive statistics on respondents who grew up only in two-parent and single-parent families, those who ever experienced substitute care, and those who were on their own before age 17. (The data entries are the percentage of the sample in each column who have the row characteristic.) Other descriptive data, means, and the variables used in the multivariate models are shown in Appendix Table A.

[4]This scale measures whether the respondent felt in control of his/her own life or felt that external forces were in control.

FIGURE 1
Average Educational Achievement, by Family Type and Out-of-Home Experience



Source: Author's Calculations from the National Longitudinal Survey of Youth.

FIGURE 2

Percentage Finishing High School, by Family Type and Out-of-Home Experience

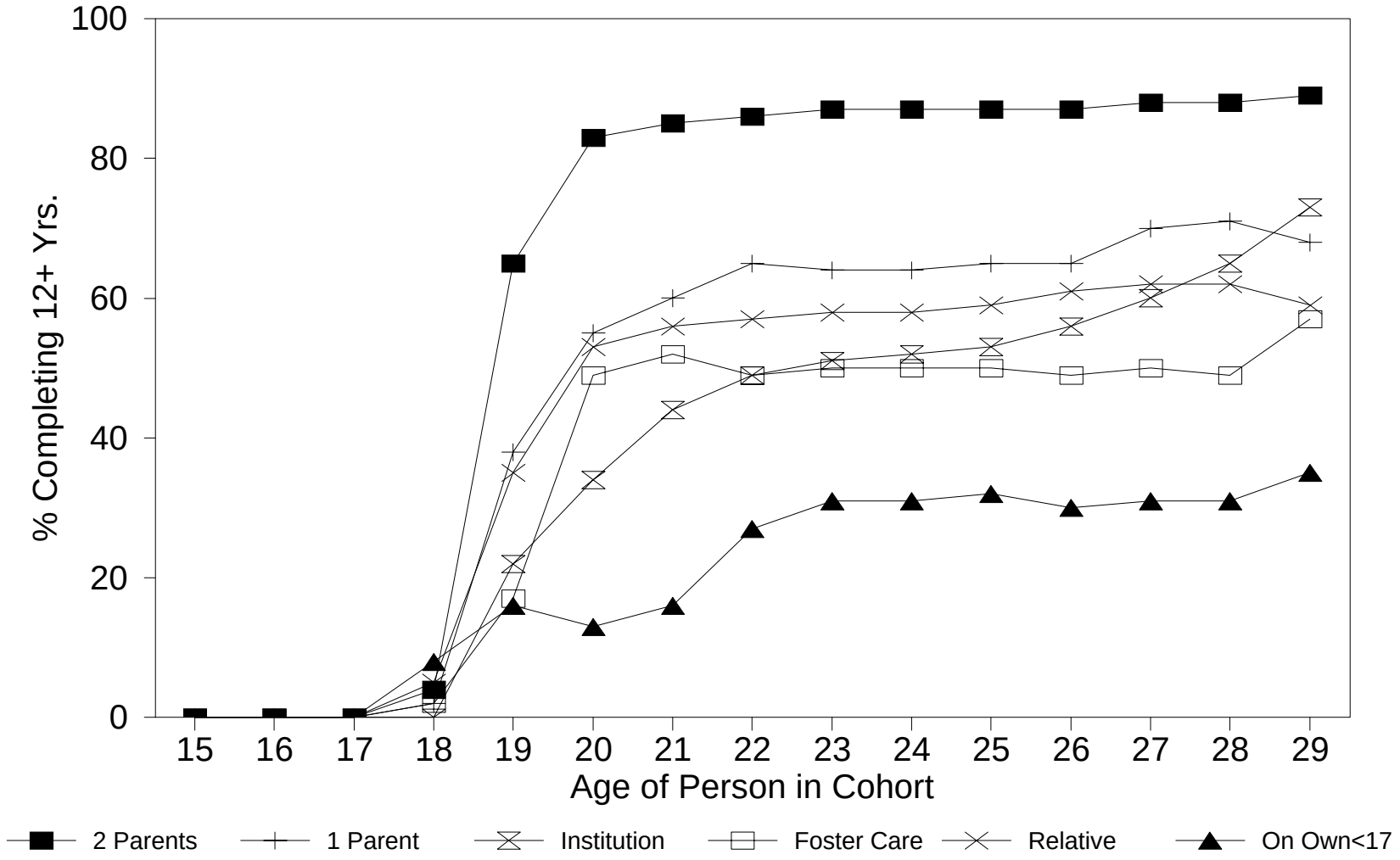


TABLE 1
Descriptive Statistics on Youths and Their Parents[a]

	In Total Sample	Among Those Who Lived with Only One/Two Parents		Among Those Adopted[b]	Among Those in Substitute Care[c]			Among Those on Own Before Age 17
		Birth Parents	Single Parent		Kin	Foster Family	Institution	
Education								
Highest grade completed by age 25 (years)	12.8	13.2	11.5	13.3	11.5	11.3	11.3	10.2
Percentage high school graduates	88	92	70	95	74	70	73	53
Percentage college graduates	23	28	7	21	8	7	7	2
Achievement Score (AFQT)	-0.15	4.31	-32.17	10.61	-21.62	-22.32	-20.83	-19.75
Demographic Characteristics (%)								
Born to single parent	2	0	100	NA	11	10	8	8
Hispanic	7	6	9	2	12	6	13	9
Black	14	10	64	7	30	14	15	10
Female	49	48	47	40	50	57	40	57
Parental Background (%)								
Family income below poverty line in 1979	14	10	50	4	28	30	32	24
Father not a high school graduate	40	35	76	31	66	72	59	61
Father had more than 12 years education	27	31	05	48	11	07	13	14
Mother not a high school graduate	35	31	64	24	60	57	46	47
Mother had more than 12 years education	20	22	09	33	11	09	25	04
Magazines in home	66	71	34	82	44	46	48	49
Mother worked when respondent was age 14	52	49	55	50	47	49	54	40
Mother a professional or manager	09	10	05	20	06	05	06	08
Father worked when respondent was age 14	81	93	13	84	59	64	66	71
Father a professional or manager	23	28	02	40	09	10	14	11
Mother born in U.S.	93	92	95	96	90	88	89	90
Father born in U.S.	92	93	75	95	86	82	90	89

(table continues)

TABLE 1, continued

	In Total Sample	Among Those Who Lived with Only One/Two Parents		Among Those Adopted[b]	Among Those in Substitute Care[c]			Among Those on Own Before Age 17
		Birth Parents	Single Parent		Kin	Foster Family	Institution	
Residential Characteristics (%)								
In South at age 14	32	30	50	38	44	40	38	38
In central city in 1979	16	14	30	16	21	12	14	11
In rural area in 1979	21	22	19	23	21	29	16	18
In public housing in 1979	03	04	18	00	06	11	08	07
Family moved when respondent was 14–17	12	09	15	06	26	38	25	23
Problems as Adolescent (%)								
Drank before 15	10	9	10	15	13	22	45	30
Police contact before 15	06	05	08	05	10	18	24	16
Did not use drugs before age 18	61	65	64	54	61	49	43	47
Used drugs before 15	04	03	04	07	07	13	28	16
Teenage mother[d]	32	23	57	26	60	63	52	74
Parental Problems (%)								
Alcoholic parent(s)	23	16	22	15	40	48	40	46%
Parental abuse or neglect	00	00	01	00	02	19	13	00
Parents divorced or separated	17	00	06	08	33	34	42	37
Parent died or too ill to care for respondent	08	00	11	08	32	42	22	18
N	10,400	6,226	448	111	607	92	90	140
% of Sample	100	65.5	2.3	1.4	4.4	0.7	0.6	1.1

[a]Excluded from the table are two-parent families that experienced divorce, separation, or remarriage, as well as single, unwed parents who later married; these total about 25 percent of all families. The data entries are the percentage of each column sample who have the row characteristic.
[b]Adopted by a couple before age 2.
[c]In substitute care for at least 4 months before age 18.
[d]Percentage of female population.

Educational Attainment

Table 1 shows that the average respondent had completed 12.8 years of schooling; 88 percent completed high school or its equivalent (82 percent graduated from high school and 6 percent obtained a graduate equivalency degree);[5] and 23 percent graduated from college. We also see the great disparities among the various groups defined by the type of family they grew up in. There is a range of those completing high school from 95 percent (adopted) to 53 percent (on own).

Substitute Care

At the end of the table we see that about 5 to 6 percent of the sample had lived in a substitute care arrangement before reaching adulthood: 0.7 percent in foster family care, 0.6 percent in institutional care, 4.4 percent with relatives (kinship care), 0.6 percent in institutions, and 1.1 percent lived on their own by age 17. (Another 5 percent left home to go to work, join the military, get married, or for other reasons by age 17.)

This table provides a richer picture than Figures 1 and 2. Comparing column 2 with subsequent columns suggests that children who grew up in two-parent families scored higher on standard measures of success than children who lived in single-parent families or in substitute care. Furthermore, parents in column 2 also scored higher on socioeconomic status measures. Youths from two-parent families were more likely to have parents who completed high school, who were more economically secure, and who worked as professionals or managers.

On the other hand, for example, respondents who spent some of their childhood in substitute care generally had more problems than did other children, including those who grew up in single-parent families. In particular, they were less likely to graduate from high school. They were more likely to have

[5]There is controversy about the utility and equivalency of the GED. I decided to use the last year of formal schooling completed by the respondent. That is, if a person completed 7 years of schooling and then obtained a GED, they were coded as achieving 7 years of educational achievement. I made this decision after a private discussion with James Heckman, University of Chicago, but I am responsible for this choice, not he.

had trouble with the police, drugs, or alcohol before they were 15 years old. Their parents were more likely to have dropped out of high school, although substitute care respondents were as likely to have mothers who had more than a high school education. They were more likely to have an alcoholic parent, to have been abused or neglected, and to have a parent who died or was too ill to care for them. They were much less likely to be black than were youths who grew up in single-parent families.

The educational achievement of children on their own in their teens was quite stark. Youths who left home before age 17 were much less likely to finish high school. Their average education at age 25 was almost two years behind children of single parents and three years behind children who grew up in two-parent families.

It is interesting to note that children adopted before they were 2 years old attained somewhat more education, on average, than those who grew up in two-parent families,[6] perhaps because their adoptive parents were much more likely to have been college educated. Adopted children, however, were less likely to graduate from college than youth from intact families.

MULTIVARIATE ANALYSIS

Table 2 summarizes results from a series of regression models. Reading the table from left to right shows the association of educational achievement with family type and substitute care experience as additional sets of variables are added to the models. The sets added are shown in the final panel of the table. Model 1 displays the results of regressing educational achievement on each single family type and substitute care arrangement. This compares each group with all other youths, including those from two-parent families. Without any control variables, youths in substitute care were on average 1.5 to 2.5 years

[6]Youths were coded as adopted if they reported that they had both an adoptive mother and an adoptive father before they were 2 years old. This coding decision was made to try to identify children who might have been adopted through an adoption agency, not adopted by a stepparent.

TABLE 2
Regression Equations: Relationship of Educational Achievement (Highest Grade Completed) and Family Type, Substitute Care Arrangements, and Control Variables

Variables	Model 1[a]	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Standard Error[b]
Family Structure								
2 Parent 0-18			Comparison Family Type					
1 Parent 0-18	-1.44***		-1.08***	-0.03*	-0.25***	-0.96***	-0.22**	0.14
1 Parent:0<18	-0.97***		-0.81***	-0.27	-0.33**	-0.54***	-0.18	0.14
Widow/no Rem.	-0.07		-0.01	+0.36***	+0.42***	+0.09	+0.47***	0.11
Div./no Rem.	-0.21**		-0.46***	+0.02	-0.09	-0.10	+0.03	0.08
Widow/Remar.	-0.09		-0.10	+0.16	+0.24	-0.11	+0.25	0.16
Div./Remar.	-0.56***		-0.91***	-0.43***	-0.41***	-0.35***	-0.21**	0.09
Adopt:Birth	+0.39*		+0.38*	-0.30*	-0.44*	+0.26	-0.42**	0.17
Substitute Care and Other Living Arrangements								
Institution	-1.52***	-0.76**	-0.85***	-0.74***	-0.63**	-0.54*	-0.42	0.26
Foster Care	-1.67***	-0.91***	-0.87***	-0.34	-0.30	-0.53**	- 0.13	0.25
Relatives	-1.28***	-0.99***	-0.81***	-0.26***	-0.30***	-0.67***	-0.25**	0.10
On Own < 17	-2.44***	-1.21***	-1.18***	-1.08***	-1.04***	-1.02***	-0.95***	0.21
Other/Misc.	-2.31***	-1.34***	-1.32***	-0.90***	-0.83***	-1.04***	-0.65***	0.10
Other/College	+2.75***	+2.68***	+2.79***	+2.22***	+2.15	+2.61***	+2.17***	0.32
Variables Added to Models								
Demographic (7)[c]					X		X	
Location (7)					X		X	
Parental SES (15)				X	X		X	
Attitudes and Religion (5)						X	X	
Parental Problems (3)						X	X	
Youth Problems (7)						X	X	
R2		0.04	0.06	0.32	0.33	0.16	0.37	

Source: Author's calculations from the National Longitudinal Survey of Youth.

Notes: N = 9291. Approximately 1100 observations were dropped owing to missing variables. Significance: probability of null (no difference) hypothesis being true, blank = not significantly different, *p <.10, **p <.05, ***p <.01.

[a]Uncontrolled variable model: these coefficients are produced by running separate regressions on each variable alone.

[b]To conserve space and aid clarity of data presentation, the standard error of estimate is shown only for the final model. The standard error for different model specifications did not vary a great deal. In estimating the t-value of coefficients across model specifications, using this standard error. Because the standard error for different model specifications do not differ a great deal, this standard error shown can be used to approximate t-values for various models by dividing the coefficient by the standard error shown for a particular row.

[c]The numbers in parentheses are the number of variables in this conditioning set of variables.

behind in educational attainment, and all coefficients were significantly negative ($p<.01$). Model 2 runs the substitute care variables together, without other controls. The coefficients are still significantly negative ($p<.01$), but only about one-half the value in column 1.

The first two models (columns) do not, however, explain much of the variation in educational achievement, as shown by the r^2 value at the bottom of the table. When all the family-type and substitute-care variables are run in a single model (Model 3), we see that the coefficients are still significantly negative as compared to children of two-parent families, but have essentially the same values as Model 2. This suggests that family type may not significantly influence the association between substitute care and educational achievement.

When variables representing the socioeconomic status of parents are introduced, in Model 4, the substitute care and family type coefficients are smaller and less significant. The adoption coefficient goes from positive (although not significant) to significantly negative at the .05 percent level. Institutional care remains relatively unchanged. The foster care and kinship care coefficients drop dramatically. The model's explanatory power jumps fivefold, explaining almost one-third of the variance in educational achievement. This set of variables has by far the most overall explanatory power, as indicated by the r^2. The explained variance increases significantly when parental SES is introduced and drops when it is deleted from model specifications. SES seems to explain about 20 percent of the variance.

The full model specification (Model 7) and coefficient standard errors are shown in the last two columns. Overall, this table tells the following stories about highest grade completed by young adults who spent part of their youth in substitute care compared to children of two-parent families.

Institutional Care

Before introducing statistical controls (Model 1), we see that youths who spent four or more months in institutional care had significantly ($p<.01$) lower (1.5 years) levels of education. Controlling

for family types (Model 3) reduces the marginal relationship to about 0.85 years of education ($p<.01$). Parental SES does not appear to have the power to explain differences here that it does with other family types and substitute care arrangements. (Compare Models 4 and 5 with Model 3.) When other conditioning variables (attitudes, parental problems, youth problems) are introduced, the coefficient is no longer significant. This seems to suggest that children who go into institutional care, on average, may be different from other children in ways that make it very difficult to identify the true effect of institutional care on educational achievement.[7]

Foster Care

Children who spent time in foster care, without controls for other variables, achieved significantly ($p<.01$) lower schooling, about 1.67 years, than children in two-parent families. Incorporating other forms of substitute care into the model (Model 2) lowers the difference to 0.91 years ($p<.01$), and controlling for other family types (Model 3) changes it somewhat, to 0.87 years ($p<.05$). Controlling for demographic and family SES variables (Model 4) lowers the difference to insignificance (0.34). This may be an important finding: the lower educational attainment of those who were in foster care may not result from the foster care per se, but from the fact that their own parents had low SES. The foster care coefficient has a large standard error, however, so we must be cautious in this interpretation.

This finding is tempered by the observation that, as with institutional care, educational achievement of children who experience foster care may also might be associated with the attitude and adolescent problems variables that may have precipitated their foster care status.

[7]Using an instrumental variable or some other method to model who goes into institutional care would appear to be a fruitful approach, if sample sizes are not too small.

Relatives (Kinship Care)

This group contains youth who lived with grandparents, aunts and uncles, or other relatives. Introducing the family type variables (Model 3) drops the coefficient on kinship care from -0.99 to -0.81 ($p<.01$). Parental SES (Model 4) seems to have an important effect on the educational achievement associated with this type of care, but in the full model (Model 7), the coefficient on living with relatives, -0.25, is still statistically significant ($p<.05$). (Kinship care has a much smaller standard error because of the larger number of sample cases.) As Table 1 showed, youth who lived in kinship care tended more than other youth in substitute care to be from minority, single-parent families in which the mother lacked a high school degree, factors which are generally associated with low educational achievement.

On One's Own before Age 17

This group contains runaways, children whose parents evicted them, and children who at a young age lived with friends for unknown reasons. As one might expect, these adults had the lowest educational achievement. Without controlling for other variables they lagged about 2.44 years behind others. When conditioned on other substitute care arrangements, the marginal educational difference drops to -1.18 years. Adding parental types, demography, geography, and SES does not affect the coefficient, which remains significant at -1.04 years ($p<.01$). Controlling for the full set of variables (Model 7) lowers the coefficient to -0.95, but it is still significant ($p<.01$) and the most negative among all family types and substitute care variables. This suggests that youths who move out of their homes at ages less than 17 have significant social problems that account for a great deal of their educational problems. The causal direction could be the other way, however: educational problems could be the source of conflicts with parents and leaving home, another form of endogeneity. Wojtkiewicz (1993a) observes that leaving home at early ages is often contemporaneous with leaving school.

Adoptions

In unconditioned comparisons, children adopted before age 2 had significantly ($p<.10$) higher educational attainment, +0.39 years, than children of all other family types; however, when the full set of conditioning variables is introduced, adopted children have significantly ($p<.05$) lower education, -0.42 years, than children from two-parent families. They finished high school, but not college, as often as those from two-parent families.

The parental SES variables, particularly the education of the adopting families, seem to be the important factors. Parents of adopted children have higher education on average than parents in intact families (Table 1). After controlling for the adopting parents' education, these children have lower educational levels: they do not seem to do as well as expected, especially in completing college, given their parental environment. On the other hand, we lack information about their natural parents, the adoption circumstances, and their formative years.

Logistic Regressions

Because it is difficult to interpret the policy significance of average years of education when differences are registered in tenths of years, I ran logistic regressions using the full model specification of variables to predict the probability of high school graduation, college graduation (full sample), and college graduation (given high school graduation). The results were quite similar to those in the analysis of years of schooling completed by age 25

CONCLUSIONS

The NLSY is a valuable tool for providing us insights about a group of youth who lived part of their childhood away from their parents. Children who spent some time in substitute care had lower educational achievement than children who grew up in two-parent families. We cannot determine the

extent to which this educational deficit results from the circumstances precipitating entry into substitute care, the characteristics of the youth themselves, or the experience of being in substitute care. It probably is a combination of all three. Apparently much of the difference can be explained by the fact that children who went into substitute care came, on average, from backgrounds associated with low educational achievement if they had remained with their parents. However, even when an extensive set of control variables was introduced, these young adults fared worse educationally than their peers from two-parent families.

Children adopted by two parents at a young age were likely to have parents with much more education than the general public. Adopted children were different in many ways from youth who were on their own or in substitute care. They completed high school more often than did other youth, but not college.

Not surprisingly, parents are important influences. Their socioeconomic status, particularly education, was associated with their children's educational achievement. The data used in this analysis cannot shed light on how this influence operates. Human capital theories are quite plausible, but role and supervision models cannot be ruled out.

Although this may be one of the first studies to use a nationally representative survey to study some effects of substitute care, it has a number of limitations. As noted earlier, I did not adequately attempt to deal with selection problems. An instrumental variable or other approach might be used to estimate who is likely to be placed in substitute care and then used to predict educational achievement. The small number of observations of youth in substitute care could be a serious barrier to this approach, as could the problem of finding exogenous variables that would predict entry into substitute care but not educational achievement. Moreover, it is possible to misinterpret data about parents who the respondent (child) was living with at age 14. Although the questions ask about the "mother," "father" the respondent

was living with at age 14, we do not in truth know who respondents living in foster care or other situations away from their natural parents were thinking about when they answered the question.

Furthermore, the variables used in this research to explain educational achievement did not include information on the quality of schools attended. Data on schools attended are in the data set and could be used to more advantage in future research. I also could have done more with data on neighborhoods where NLSY youths grew up.

There may be very different patterns by gender and race. I tried to run the full model on these subgroups, particularly young black males. Unfortunately, the sample size and the number who experienced different family types and substitute care were too small to obtain reliable estimates.

Some major shortcomings of this data set hopefully will be eliminated when the Department of Labor fields the new Longitudinal Survey of Youth, a second cohort of approximately 12,000 youth, which starts its first interviewing this year. The early design specifications attempt to identify more of the changes occurring within the family at earlier ages and in a sequence permitting them to be linked to educational achievement at a much earlier age than NLSY79. I hope that NLSY97 will try to identify whether children come into contact with the child welfare system or are just in informal substitute care arranged by relatives and friends. Good, nationally representative data that might help inform public policy are particularly sparse in this area.

APPENDIX TABLE A
Description of Variables

Variables	N	Mean
Dependent Variables		
Highest grade completed by 1989	10,413	13.057
Highest grade completed by age 25	10,413	12.846
Completed less than high school (1=yes)	10,413	0.180
Substitute Care Variables (1 = yes)		
Lived in institutional care	10,413	0.006
Lived in foster family care	10,413	0.008
Lived in kinship care	10,413	0.044
On own before age 17	10,413	0.011
Left home--other reasons	10,413	0.027
Left home to go to college	10,413	0.004
Family Structure Variables R lived in: (1 = yes)		
Two-parent family, <18 (omitted)	10,413	0.656
One-parent family, <18	10,413	0.024
Unwed parent who later married	10,413	0.023
From two-parents to one parent (died)	10,413	0.035
From two-parent to one parent (div/sep.)	10,413	0.064
Two-parent to one parent (died)-remarried	10,413	0.014
Two-parent to one parent (div/sep.)-remarried	10,413	0.048
Couple adopted before age 2	10,413	0.004
Parental SES Variables (1 = yes)		
Father's education < 12 years	8,903	0.403
Father’s education= HS degree (omitted)	8,903	0.224
Father's education > 12 years	8,903	0.270
Father's education unknown	8,903	0.103
Mother's education < 12 years	9,751	0.355
Mother’s education= HS degree (omitted)	9,751	0.389
Mother's education > 12 years	9,751	0.203
Mother's education unknown	9,751	0.053
Family had magazines in home	10,340	0.656
Mother was professional/manager	5,089	0.093
Father was professional/manager	7,123	0.227
Mother born in U.S.	10,397	0.925
Father born in U.S.	10,348	0.921
Family on welfare in 1979	8,053	0.093
Father not working when R=14	8,372	0.050
Mother worked when R=14	10,167	0.516
Family income< poverty in 1979	9,563	0.143
Demographic Variables		
Number of siblings	10,396	3.367
Was eldest child (1 = yes)	10,396	0.211
Was only child (1 = yes)	10,396	0.031
Year of birth, 57-64		
Female (1 = yes)	10,413	0.491
African American, Non-Hispanic (1 = yes)	10,413	0.142
Hispanic (1 = yes)	10,413	0.065
White, Non-Hispanic (omitted)	10,413	0.793

(table continues)

APPENDIX TABLE A, continued

Variables	N	Mean
Residential Variables (1 = yes)		
Lived in the South when R=14	10,413	0.314
Lived in SMSA, Central City	10,191	0.157
Lived in rural area in 1979	10,228	0.213
Lived on farm when R=14	10,350	0.050
Lived in public housing in 1979	9,519	0.032
Moved when < 10 years old	10,413	0.211
Moved during ages 10 to 13	10,413	0.126
Moved during ages 14 to 17	10,413	0.123
Attitudinal Variables		
Catholic (1 = yes)	10,365	0.330
Jewish (1 = yes)	10,365	0.013
No religious affiliation (1 = yes)	10,365	0.112
Attended religious functions at least monthly (1 = yes)	10,397	0.527
Locus of control scale	10,343	7.180
Parental Problems (1 = yes)		
At least one of parents had an alcohol problem	10,413	0.233
Mother had first child when she was a teen	10,413	0.066
Youth had to leave home because of abuse or neglect	10,413	0.003
Youth Problems (1 = yes)		
Youth started drinking before age 15	10,413	0.109
Started drinking between ages 15 and 17	10,413	0.426
Had contact with police before age 15	10,413	0.062
Had contact with police between ages 15 and 17	10,413	0.067
Did not use drugs	10,413	0.615
Used at least one form of drugs before age 15	10,413	0.039
Used at least one form of drugs between ages 15 and 17	10,413	0.217
Had health problems in 1979	10,220	0.048
Achievement Test		
Armed Forces Qualification Test (normed so that mean = 0 and std. dev. = 1)	9,897	0.291

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