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How Large Are the Effects from Temporary Changes in Family Environment: Evidence from a Child-Evacuation Program During World War II[†]

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During World War II, some 50,000 Finnish children were evacuated to Sweden and placed in foster families. The evacuation scheme limited sharply the scope for selection into foster care based on background characteristics. A first-come first-served policy was applied where the children were assigned a running number and processed anonymously. Using register and survey data, I examine the extent to which the foster environment affected later life outcomes of the Finnish child evacuees. The results show that nurture, the socioeconomic environment at early stages of life, has important effects on schooling. (*JEL* I21, J13, J24, N34, N44)

The effect of the rearing environment on schooling outcomes of an individual is one of the central questions in the social sciences and policymaking. The causal analysis of this effect is nontrivial due to the difficulty of sorting out genetic factors and fetal environment from postbirth factors. It is ethically unjustifiable to create the ideal laboratory conditions necessary to analyze the matter. Fortunately, however, nature sometimes creates conditions that approximate a randomized experiment and thereby eliminate, or at least substantially mitigate, the problem of confounding.

Finland fought two wars against the Soviet Union between 1939 and 1944. During these wars roughly 49,000 Finnish children aged 1 to 10 (on average, age 5 at evacuation) were evacuated to Sweden and spent, on average, 2 years in foster families.[1] The evacuations were conducted between 1941 and 1944 by a large scale evacuation scheme with organized logistics on both sides of the border. The evacuation scheme was funded primarily by the Finnish and Swedish governments, but

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[1] The families did not receive any financial compensation for fostering.

also received large private donations. A first-come first-served policy was applied where the children were assigned a running number and processed accordingly. Each contingent of evacuees went through several stages before the final placement, each of which is supposed to have leveled out initial inequalities with respect to health, nutrition, and appearance. Regroupings and the splitting of the contingents into smaller entities occurred along the way toward the final placement, a process that sharply limited the scope for selection into foster care based on background characteristics (a detailed description of the historical background and the evacuation scheme is provided in online Appendix A). Because of the external shock (i.e., the war) that caused the need for the evacuation program and the large scale mobilization of foster families on short notice, both biological families and foster families are expected to be less a selected group of families as compared to the ones in adoption data.[2]

In this paper, I examine how a child's human capital formation, in particular school track choice at age 11 and the completion of a tertiary education, is affected by a temporary switch in the socioeconomic family environment. I use a random sample drawn from war time government records in which detailed preintervention data on the evacuees who returned to Finland (some 5,000 children are known to have been adopted by their Swedish foster families) are stored, and I complement these data with a survey collecting information on the foster and biological family environment and schooling outcomes.[3] Even though the anecdotal evidence suggests that the scope for sorting was limited, the statistical tests show that the socioeconomic rearing environment in Finland does not balance across different socioeconomic foster environments in Sweden for the subgroup that was proficient in Swedish prior to evacuation.[4] I thus limit the analysis to the subgroup of the population of evacuees that was not proficient in Swedish prior to evacuation.

I find that a 1 standard deviation increase in foster father's occupation-based socioeconomic index (e.g., a move up from being a sheet metal worker to becoming a bookkeeping assistant) increases the probability of going to secondary school by 4.8 percentage points. This is a large impact considering the relatively short period of time spent with the foster parents. Since school track choice is made at age 11, there are 9 months prebirth and 10 years postbirth during which parental input has an impact. The foster parents had an impact during two of the ten years postbirth and no impact via biology. The results also show that the temporary rearing environment of the evacuees had a larger impact on schooling for girls than it had for boys, the point estimates of the foster family effect for boys being two-thirds the size that of girls and not statistically significant. Furthermore, foster family input seems to have a larger impact for children who were 5 years old or younger at the time of evacuation than for children evacuated at older ages.

[2] The war caused adverse conditions for children who came from the whole range of prewar socioeconomic backgrounds. Many professionals sent their children away, as is seen from the descriptive statistics in Table E-1 of online Appendix E.

[3] The survey was conducted in September 2005. In total, 887 surveys were returned with a response rate of above 60 percent.

[4] Swedish was next to Finnish as the other official language of Finland in the 1940s, with a 10 percent share of the population speaking Swedish as their mother tongue. In the coastal regions, where the most populous Swedish communities are located, bilingualism was not unusual among each native group in the 1940s.

By looking at how childhood environment affects schooling outcomes, this paper contributes to the debate over what the returns to interventions into a child's early life environment are. The main challenge that the recent research has focused on is how to sort out environmental effects from genetic inheritance (e.g., ability) and fetal environment. A recent literature in economics has examined the effect of neighborhood quality on economic and social outcomes exploiting random variation in the neighborhood placement of households through housing programs, e.g., the papers on the "Moving to Opportunity Program" (MTO) (Katz, Kling, and Liebman 2001; Sanbonmatsu et al. 2006; and Kling, Liebman, and Katz 2007; to name but a few) and Oreopolous (2003). Kling, Liebman, and Katz (2007) find that having been randomly assigned to a safer residential location through the MTO program had beneficial effects on education, risky behavior, and health for girls, but had no, or negative, effect for boys. Oreopolous (2003) finds that once family characteristics are controlled for, the neighborhood has no long-run effect on earnings or labor attachment. At the same time, Gould, Lavy, and Paserman (2004), who adopt a similar estimation strategy to the one in the current study, find that attending a high-quality elementary school has a large positive effect on high school matriculation outcomes. They exploit an airlift of Ethiopian Jews to Israel during the so-called "Operation Salomon" in May 1991, (i.e., an emergency rescue of Jews after rebellious troops were threatening to succeed with their coup d'état) and the resulting quasi randomization of the initial elementary school environment of the airlifted children in Israel.[5,6]

The novel result that this paper provides is that a relatively short-lasting switch in the early childhood environment may have substantial effects on later-life outcomes. This result has important implications for policy. For instance, early childhood interventions may not necessarily need to be long lasting to have important effects. A two-year intervention into a child's environment may make a substantial difference for the educational attainment of the child. My paper also contributes to the debate over the timing of interventions. Heckman (2007) argues that the later remediation is given to a disadvantaged child, the less effective it is. My results support this statement by showing almost twice as large responses of foster family environment on education among the children evacuated before age five as compared to those evacuated at later stages of childhood.

The remainder of this paper is organized as follows. The next section describes the data and the empirical strategy. Section II tests for whether the evacuee's family background characteristics balance over the distribution of foster family's socioeconomic status. Section III presents the empirical estimates of the effect of the foster family environment on schooling. Section IV presents robustness checks and Section V concludes the paper.

[5] Gould, Lavy, and Paserman (2011) also find large positive effects of childhood environment on long-run outcomes for children of Yemenite Jews who were airlifted in 1949 to Israel and located in a random fashion around the country to neighborhoods independent of their own socioeconomic backgrounds.

[6] This paper is also related to the recent literature on intergenerational mobility seeking to quantify how much of the observed intergenerational transmission is due to prebirth characteristics and how much is due to the postbirth environment by use of adoption data (Björklund, Lindahl, and Plug 2006; Sacerdote 2007). Furthermore, another related literature is the fetal programming literature analyzing the long-run effects of early life health shocks, including in utero experiences, e.g., Almond (2006).

I. Data and Empirical Framework

A. *The Econometric Model*

My basic regression model explains schooling outcome of person i with the following equation:

$$(1) \quad (\text{Schooling})_i = \lambda_0 + \beta(\text{Foster Family Environment})_i + \lambda_1(\text{Biological Family Background})_i + u_i,$$

where foster family environment is measured by the socioeconomic status of the foster family father (as measured by the occupation-based International Socio-Economic Index (SEI) derived by Harry B. Ganzeboom et al. 1992). Biological family background variables, in particular socioeconomic status of the biological family (as measured analogously as for foster family using biological father's SEI), are included in order to control for potential sorting of the children into foster families based on background. The error term u_i represents an unobserved child-specific characteristic assumed to be uncorrelated with both the foster family environment and the biological family background. If all factors that potentially may have caused sorting can be controlled for, it follows that β can be interpreted as causal. Section II tests empirically whether sorting took place. Even in the absence of sorting, the controls are warranted for the purpose of reducing the standard errors.

A causal interpretation of β rests on the strong assumption that all unobserved characteristics of the foster family and the outcome variable are unrelated. Since this is a rather unrealistic assumption, I prefer, in the spirit of Holmlund, Lindahl, and Plug (2011), to interpret β as an estimate of the foster family's socioeconomic status, and all other factors that are correlated with it and have an independent effect on child evacuee's schooling, net of the genetic inheritance.

The model is estimated using ordinary least squares (OLS) with standard errors that are robust to heteroscedasticity.

B. *Data and the Survey*

In order to estimate equation (1), I need three types of information about each evacuee: (i) the evacuee's schooling outcomes, (ii) the socioeconomic background of the evacuee's foster family, and (iii) the socioeconomic background of the evacuee's biological family. To that end, we[7] combine data from war time government records on the evacuees with a survey conducted for a random sample of child evacuees.

Register data dating back to World War II on the biological family background, (iii), are available in the Child Evacuee Registry at the National Archives of Finland. In these government records, an evacuee card is stored for each of the 48,628 Finnish children who were sent through the official evacuation scheme and

[7] Myself and a multidisciplinary team of researchers from University of Helsinki.

were returned to Finland.[8] We drew a random sample of 1,931 evacuee cards.[9] In order to obtain data on the evacuee's foster family background and her schooling outcomes, (i) and (ii), we conducted a survey for our sample.

At the Population Register Centre in Finland (PRCF) and Swedish Tax Agency (Skatteverket), we identified 1,157 individuals (60 percent) from our original evacuee card sample as still alive and residing in Finland or Sweden as of June 2005. Two important reasons caused the decline in the sample size for the survey. First, the population registers and social security numbers were introduced in Finland during the last years of the 1960s. This means that persons who had died or changed citizenship pre-1970 were not identified by the PRCF.[10,11] Second, we were only able to identify those expatriates living in Sweden as of 2005.[12] We are particularly concerned about identifying those who had emigrated from Finland to Sweden. During the post-war period the overwhelming majority of the Finnish emigration was directed to Sweden with 329,000 persons (81 percent) out of a total of 405,000 emigrants ending up in Sweden during the period 1946–1970 (Majava 1973). The Finnish emigration to Sweden peaked in 1970 when roughly 45,000 Finns left the country and no less than 40,000 of these left for Sweden (Allefresde 1973).[13] Thus, in order to avoid attrition, it is important to include the expatriates in the data.

Another potential source of selection is the adoption of evacuees by their foster families. In total 5,380 evacuees belonging to our base population were adopted after the war by their foster parents. However, because of difficulties in identifying these individuals we draw our sample from the evacuee card register that contains only those children who were returned to their biological families after the war. A random sample ($n = 120$) of the adopted evacuees' evacuee cards (stored in a separate register at the National Archives of Finland) shows that they were, on average, from lower socioeconomic backgrounds, and more often from shattered families than their peers who returned home.[14] Without information on these children's foster family characteristics, or on their outcomes, it is, however, hard to draw conclusions about the direction of the bias that this selection in our data may cause. For the estimates of foster family input to be upward biased, the adopted children who were placed in families of high (low) social class must have underperformed

[8] In addition to the evacuations supervised by the Evacuation Committee, roughly 10,000–15,000 children are known to have been sent to Sweden through private bilateral organizations and to family and friends.

[9] The sample does not contain any siblings due to the sampling method, i.e., we drew every twentieth card from the alphabetically ordered card registry.

[10] A follow-up 10 percent sample of the Finnish Census of 1950 by Statistics Finland reveals, that for that sample, the maximum identification rate (1950 base population-deaths-expatriates) from the 1970 years population register is 74.5 percent. For our sample, the equivalent identification rate is 77 percent.

[11] Table D-2 in online Appendix D presents results from a regression where identification is regressed on background characteristics of the evacuee. Age at evacuation, having proficiency in Swedish prior to evacuation, and being female (perhaps a proxy for longevity) were the statistically significant determinants of identification.

[12] Skatteverket (The Swedish tax authority) identified for us the ones who, by the PRCF, are reported to have moved to Sweden or to an unknown destination country. Skatteverket was able to identify 213 individuals in our sample living in Sweden as of August 2005.

[13] The agreement on the Nordic Common Labour Market concluded by the Nordic governments in 1954 favored immigration from other Nordic countries in the late 1960s, when Sweden started restricting immigration from Southern Europe and former Yugoslavia.

[14] See Table D-4 in online Appendix D for a comparison of the background characteristics between the sample of returned evacuees and the adopted children.

(outperformed) their peers who returned to their biological families. As I condition on biological family background, this scenario is highly unlikely.

The survey was conducted in September 2005. After a second reminder, 887 questionnaires were returned with a response rate of roughly 65 percent.[15,16] Table D-3 in online Appendix D presents the results from a probit regression of a dummy for responding to the survey against background characteristics. The propensity to respond does not balance on all background characteristics. For example, females and those who had been subject to air raids, are overrepresented in the sample. It is reassuring though that characteristics such as having been relocated as a child from the war zone, living in a town during the war, and the father having died in war—all arguably socioeconomic characteristics—do not affect the response probability. I correct for potential nonresponse bias by weighting observations by the inverse of the response probability, as proposed by Angrist and Pischke (2009).[17]

Table 1 reports the means and standard deviations of the variables used in the analysis. Online Appendix B contains a list of detailed variable definitions.

II. The Balancing Test for Selection into Foster Care

The anecdotal evidence on the evacuation scheme presented in online Appendix A suggests that the scope for selection into foster care based on background characteristics was limited. However, a disturbing feature of the anecdotal evidence is that it suggests that at the final stage of the operation, where the evacuees were assigned to foster families, these families were able to select among the available children. Even though the information of the children's background was sparse (only their name and a running number assigned to them upon departure was documented on a plate hanging around their neck), communication between the foster parents and those evacuees who were proficient in Swedish may have taken place at the absorption center from where the foster children were picked up. This goes particularly for counties where several families had volunteered at the same time, and consequently several children within the same contingent arrived to the local absorption center creating scope for sorting.

In this section, I test whether the evacuees were placed into foster care independent of their background characteristics. More exactly, I regress foster father's SEI against all available background characteristics (including each of the initially imposed eligibility criteria). For transparency, the sample is split into four groups defined by gender and proficiency in Swedish at the time of evacuation. If the assignment was indeed random, I would not find any significant association between foster father's SEI and the background characteristics. The results of the balancing

[15] Of the final sample, 135 surveyees originate from a matched comparison group to the evacuees collected from the PRCF records. The matching was performed based on age, gender, native language, and municipality of birth. The evacuee status of the comparisons was extracted through a survey and by identification of the individuals in the aforementioned complete child evacuee registry. As expected, roughly 10 percent of the comparison group actually belonged to the treated group.

[16] No money or financial compensation was offered in return for responding.

[17] The response probability is estimated using the predicted values from the test for selective response reported in Table D-3 in online Appendix D.

Table 1—Summary Statistics

	Women		Men		Full sample	
	Mean	SD	Mean	SD	Mean	SD
Panel A. Schooling outcomes						
School track choice	0.34	(0.47)	0.26	(0.44)	0.30	(0.46)
University	0.09	(0.29)	0.13	(0.34)	0.11	(0.31)
Panel B. Demographic and program characteristics						
Female					0.55	(0.50)
Age at evacuation (months)	67.45	(31.02)	62.51	(29.70)	65.14	(30.48)
Duration of evacuation (months)	26.66	(15.38)	27.02	(15.84)	26.82	(15.58)
Panel C. Biological family characteristics						
SEI-score of biological father	35.78	(13.44)	36.81	(14.26)	36.25	(13.82)
SEI-score of biological father (as filed in evacuee card preintervention)	35.03	(13.24)	35.83	(13.94)	35.38	(13.54)
Relocated from war zone* (Karelian families)	0.31	(0.47)	0.30	(0.46)	0.31	(0.46)
Father died in war*	0.10	(0.31)	0.11	(0.32)	0.11	(0.31)
Father wounded in war*	0.06	(0.24)	0.03	(0.17)	0.05	(0.22)
Subject to air raids*	0.12	(0.33)	0.16	(0.37)	0.14	(0.35)
Family lived in town (town = 1)*	0.55	(0.50)	0.61	(0.49)	0.58	(0.49)
Parents divorced	0.12	(0.32)	0.13	(0.34)	0.12	(0.33)
Mother's labor force participation	0.67	(0.47)	0.70	(0.45)	0.69	(0.46)
Panel D. Foster family characteristics						
SEI-score of foster father	42.35	(18.69)	36.26	(16.20)	39.60	(17.86)
Non-differentiation between foster child and foster siblings	0.90	(0.30)	0.93	(0.26)	0.91	(0.28)
Observations	329		270		599	

Notes: The reported number of observations refers to the observations with nonmissing values in the key variables used in the benchmark estimations in Table 3. For the variables marked with an asterisk, the entries are pulled out from the evacuation cards, i.e., preintervention government records. The rest of the data was collected through the survey.

test are reported in Table 2, where each entry represents the estimate from a single regression for foster father's SEI on one family background measure (summary statistics for the subsample of children who were proficient in Swedish at the time of evacuation is reported in Table E-2 of online Appendix E).

The first column reveals that no significant correlation between foster father's SEI and family background characteristics exist for girls who did not speak Swedish at the time of evacuation. The robust *t*-statistics are only in two out of ten regressions above one, and, even in these cases, far from being even marginally significant, indicating that no sorting based on background characteristics occurred for this subgroup. The results in the second column suggest that boys without a proficiency in Swedish at the time of evacuation were sorted into foster families based on their age at evacuation. However, no other relationship between foster father's SEI and the background variables is found. The fourth column indicates that Swedish speaking girls were sorted into foster families based on their socioeconomic background and mother's labor force participation, a variable also strongly reflecting social class during the 1940s in Finland. As for the results of Swedish speaking boys, reported in the fifth column, they follow the same pattern as the results of the non-Swedish

TABLE 2—TEST OF BALANCING-REGRESSING FOSTER FATHER'S SOCIOECONOMIC STATUS ON BACKGROUND CHARACTERISTICS

Dependent variable: Foster father's SEI	Evacuees, no proficiency in Swedish before intervention			Evacuees, proficiency in Swedish before intervention		
	Women	Men	Full sample	Women	Men	Full sample
Biological father's SEI	0.057	0.071	0.056	0.586***	0.154	0.396***
	(0.087)	(0.083)	(0.060)	(0.092)	(0.136)	(0.087)
Age at evacuation	−0.036	−0.068**	−0.042*	0.025	0.050	0.016
	(0.034)	(0.030)	(0.024)	(0.076)	(0.089)	(0.057)
Parents divorced	0.349	1.119	0.603	−4.353	−8.735	−5.675
	(2.925)	(3.122)	(2.153)	(6.482)	(5.791)	(4.687)
Both parents alive	−0.010	0.817	0.585	−4.788	2.091	−1.664
	(2.765)	(2.379)	(1.867)	(6.222)	(5.722)	(4.418)
Father died in war	−4.160	−2.021	−3.105	−0.595	−1.425	−0.180
	(3.136)	(3.106)	(2.242)	(8.891)	(10.756)	(6.973)
Father wounded in war	3.939	−0.391	3.734	−4.882	8.225	1.175
	(4.597)	(4.837)	(3.646)	(9.124)	(9.730)	(6.684)
Family relocated from war zone	−2.423	1.821	−0.416	7.127	9.472	8.026
	(2.226)	(2.200)	(1.588)	(20.968)	(18.180)	(13.799)
Family lived in town	−0.515	1.363	−0.056	4.123	1.875	3.142
	(2.059)	(1.986)	(1.467)	(4.996)	(5.526)	(3.724)
Subject to air raids	2.197	−4.162	−1.358	11.917	−4.156	3.629
	(3.342)	(2.649)	(2.218)	(8.844)	(5.651)	(6.102)
Mother's labor force participation	2.876	−1.538	0.667	−10.280*	0.581	−6.131
	(2.175)	(2.328)	(1.599)	(5.231)	(5.852)	(4.115)

Notes: Each entry represents the OLS coefficient from a separate univariate regression of foster father's socioeconomic status on family background characteristics. Robust standard errors are reported in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

speaking subgroups, as essentially no significant correlation between foster family SEI and background characteristics exists.

Overall, biological family's socioeconomic background seems to have played a role for the Swedish speaking subgroup, in particular for girls. For the non-Swedish speaking subgroup only a preference for older boys among the lower social classes seems to have existed. It is not difficult to envision how sorting based on biological family's socioeconomic background for the Swedish speakers may have occurred at the final stage of evacuation. If systematic preferences for girls from high socioeconomic backgrounds existed among the foster parents of higher social classes, they may easily have elicited information about the backgrounds through personal communication with the children at the absorption centers. The fact that no evidence of sorting of non-Swedish speaking girls was found supports the anecdotal evidence that manipulation of the placements was difficult at the initial stages of the operation.

The balancing test suggests that in order to obtain unbiased estimates, the rest of the analysis needs to be limited to the subsample of evacuees who were not proficient in Swedish at the time of evacuation.

TABLE 3—THE FOSTER FAMILY ENVIRONMENT AND SCHOOLING OUTCOMES

Dependent variable	School track choice (1)	School track choice (2)	University (3)	University (4)
Panel A. All				
Foster father's SEI	0.0027**	0.0025**	0.0014*	0.0013*
	(0.0011)	(0.0011)	(0.0008)	(0.0008)
Biological father's SEI		0.0082***		0.0061***
		(0.0014)		(0.0013)
Observations	599	599	599	599
Panel B. Women				
Foster father's SEI	0.0039***	0.0038**	0.0017	0.0016
	(0.0015)	(0.0015)	(0.0010)	(0.0010)
Biological father's SEI		0.0048**		0.0018
		(0.0021)		(0.0015)
Observations	329	329	329	329
Panel C. Men				
Foster father's SEI	0.0024	0.0022	0.0011	0.0010
	(0.0018)	(0.0017)	(0.0015)	(0.0012)
Biological father's SEI		0.0116***		0.0101***
		(0.0019)		(0.0019)
Observations	270	270	270	270

Notes: OLS coefficients with robust standard errors in parentheses. An intercept, 21 regional dummies, and 18 cohort dummies are included in each regression. Regressions reported in panel A additionally include a gender dummy. Sampling weights are used.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

III. Effects on Schooling

Using the sample of children who were not proficient in Swedish at the time of evacuation, Table 3 presents the basic results for how foster family's socioeconomic environment affected schooling outcomes of the evacuees.

Columns 1 and 2 report estimates of equation (1) using school track choice after fourth grade of elementary school as the dependent variable. At the time of World War II, cohorts attended uniform education only until the completion of the fourth grade of elementary school, after which they were divided into two tracks: a secondary school track preparing for tertiary education; and an extended elementary school track, which basically prepared for secondary degree vocational education. Panel A reports the estimations using the full sample including men and women. The OLS coefficient in the first column (0.0027) implies that a 1 standard deviation (17.9) increase in the foster father's SEI (e.g., a move up from being a sheet metal worker to becoming a bookkeeping assistant) leads to a 4.8 percentage point increase in probability of going to secondary school. This effect is substantial considering the relatively short period of time (on average two years) spent in foster care. From column 2, it is clear that the results remain robust to controlling for biological father's SEI. Columns 3 and 4 use completion of a tertiary (university) degree as a dependent variable. The coefficients are, although smaller and less precisely estimated, still marginally significant and substantial in magnitude (a 2.5 percentage point

TABLE 4—ALTERNATIVE SPECIFICATIONS

	School track choice			
Dependent variable	(1)	(2)	(3)	(4)
Foster father's SEI	0.0020*	0.0020*	0.0019*	−0.0103*
	(0.0011)	(0.0011)	(0.0011)	(0.0044)
Biological father's SEI	0.0086***	0.0085***	0.0083***	0.0084***
	(0.0015)	(0.0015)	(0.0015)	(0.0015)
Age at evacuation	−0.0032**	−0.0032**	−0.0036**	−0.0040**
	(0.0013)	(0.0013)	(0.0014)	(0.0019)
Age at evacuation × foster father's SEI				0.0016
				(0.0037)
Non-differentiation between foster child and foster siblings		−0.0328	−0.0292	−0.4572***
		(0.0735)	(0.0736)	(0.1590)
(Non-differentiation × foster father's SEI)/100				0.0105***
				(0.0035)
Duration of evacuation			−0.0011	−0.0040
			(0.0014)	(0.0030)
(Duration of evacuation × foster father's SEI)/100				0.0071
				(0.0075)
Observations	563	563	563	563

Notes: OLS coefficients with robust standard errors in parentheses. An intercept, a gender dummy, 21 regional dummies, and 18 cohort dummies are included in each regression. Sampling weights are used.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

response to a 1 standard deviation increase in foster father's SEI). Panel B replicates the estimations of panel A for women. The pattern is similar to the one found for the full sample although the coefficients are substantially larger in magnitude. Panel C reports estimates of equation (1) for men, and I find that the coefficients are smaller in magnitude for men than for women. This result is important, as it suggests that the foster environment had a larger impact on girl's schooling outcomes than it had on those of boys. A similar pattern is found by Kling, Liebman, and Katz (2007) and Gould, Lavy, and Paserman (2011), who both found that early childhood environment had a beneficial effect on girl's education but no effect on boy's education. The poor precision of the coefficients for the male subsample, however, restricts how far comparisons between the size effects for boys and girls can be pursued.

Table 4 presents the school track choice estimates for the full sample from alternative specifications that control for important program and foster family characteristics, namely age at evacuation, length of stay in foster care, and a dummy variable measuring whether the foster family differentiated between the foster child and foster siblings.[18] The effect of foster father's SEI on school track choice is somewhat smaller in magnitude (the marginal effect ranging between 0.0019 in column 3 to 0.0022[19] in column 4) when including these controls but fairly robust to altering the

[18] In addition to the specifications reported in Table 4, I also estimate nonlinear models including quadratic terms of both foster family SEI and biological family SEI, and the interaction between the linear terms of these. The results, reported in Table C-1 in online Appendix C, point toward small if any quadratic and interaction effects.

[19] The marginal effect of foster father's SEI calculated from the estimates in column 4 is evaluated at the means of the explanatory variables.

TABLE 5—THE FOSTER FAMILY ENVIRONMENT AND SCHOOLING OUTCOMES BY AGE GROUP

	Age ≤ five years at evacuation		Age > five years at evacuation	
Dependent variable	School track choice (1)	University (2)	School track choice (3)	University (4)
Foster father's SEI	0.0033*	0.0014	0.0016	0.0009
	(0.0017)	(0.0014)	(0.0015)	(0.0010)
Biological father's SEI	0.0075***	0.0071***	0.0088***	0.0050***
	(0.0019)	(0.0018)	(0.0024)	(0.0019)
Observations	284	284	315	315
F-test for $\beta_{(1)} = \beta_{(3)}$: $F = 1.62$, $p = 0.20$				
F-test for $\beta_{(2)} = \beta_{(4)}$: $F = 0.11$, $p = 0.89$				

Notes: OLS coefficients with robust standard errors in parentheses. An intercept, a gender dummy, 21 regional dummies, and 18 cohort dummies are included in each regression. Sampling weights are used.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

set of controls. Age at evacuation enters significantly in the regressions, whereas length of stay and differentiation between foster child and foster siblings seem to have a small direct effect on school track choice. Importantly though, based on the coefficients of the interaction terms between foster father's SEI and controls included in column 4, equal treatment of the foster child and foster siblings seems to play a larger role for school track choice the higher the foster family's socioeconomic status, whereas age at evacuation only seems to have a direct effect on school track choice.

Differential Effects by Age at Evacuation.—Cunha and Heckman (2008) present evidence that supports the hypothesis that the returns to interventions targeted to young disadvantaged children are higher than the ones of investments into adolescents. For my work, this finding gives rise to an interesting question regarding age at evacuation, i.e., does a temporary switch in the rearing environment have a larger impact the earlier on in the child's development it occurs? As already mentioned, column 4 of Table 4 shows that age at evacuation has a direct effect on schooling. More precisely, the older the age at evacuation, the less likely the children were to continue to secondary school after fourth grade of elementary school. The interaction term between foster father's SEI and age at evacuation is, however, insignificant, suggesting that the effect of foster family input did not vary significantly by age at evacuation. Ideally, a fully flexible analysis of the interaction between age at evacuation and foster family input would be the way to address this question. The sample size does, however, not permit such analysis. I am thus limited to a cruder way forward, i.e., subsample analysis based on divisions by age at evacuation. I use five as the cut-off age, in line with the recent literature on early childhood (cf. Almond and Currie 2011). Table 5 reports the results for estimations of equation (1) for the two age groups. A consistent pattern nevertheless emerges, where estimates of β are roughly twice as large for the group of children who were evacuated at age five or below as compared to the older age group. This result is in line with the findings of Cunha and Heckman (2008), that interventions have a larger impact

the earlier in childhood they are undertaken. Again, however, the precision of the results for the older age group, and the failure to reject the null hypothesis of equality of slope coefficients for the two age groups, restricts the comparisons of the size effects.

A concern that arises is that children evacuated at early ages are less likely to report correctly their foster parent's occupation than the children evacuated at later stages of childhood. If this was the case, the attenuation of the coefficients of the younger group would be more pronounced. The last four columns of Table E-4 of online Appendix E show that children evacuated at younger ages are indeed less likely to recall their foster father's occupation, suggesting a larger difference in the magnitude of the estimate of β between the two age groups than the one found. Another concern, in terms of generalizability of the results of this study, is to what extent the child evacuees were given equal opportunities as their nonevacuee peers to acquire the prerequisite skills required for entering secondary school in Finland. Although tracking occurred at a relatively early age, roughly 90 percent of the children returned to Finland before tracking age. Furthermore, the proportion of children continuing to secondary school was the same among those who returned after tracking age (age 11) as it was among those who returned earlier.[20] This result seems to suggest that the returning age had little impact on the school track choice. As elementary school was compulsory up to seventh grade in Sweden in the 1940s, it is unlikely that any of the evacuees evacuated at ages close to the tracking age would have missed out of schooling, and thus have compromised their possibilities of entering secondary school.[21]

IV. Robustness

I have provided empirical evidence for the assignment of children into foster families being independent of socioeconomic background conditional on not being proficient in Swedish prior to evacuation. Because it is challenging, if not impossible, to empirically identify all background characteristics causing nonrandom sorting, I need to assess the robustness of my results against omitted variables. Also, recall bias in the survey answers on father's occupation is a potential concern.

A. *Omitted Variable Bias*

Omitted-variable bias occurs if the observed foster father's SEI is correlated with unobserved biological family background characteristics, or if the observed biological family background characteristics are correlated with unobserved foster family environment factors. A conventional robustness check is to observe whether

[20] A t-test for mean comparison of the school track choice dummy between the group who retured by age 11 and the group who returned later fails to reject the null hypothesis of no mean difference between the two groups ($P = 0.49$).

[21] Svensson (2007) has documented the grades and degree of classroom attendance between 1941 and 1945 of 31 Finnish child evacuees in Alvesta, a rural county in the province of Småland. He finds that the evacuees performed equally well as their peers in the grades for conduct, and all but one pupil failed to pass Mother tongue (Swedish language). Quite surprisingly, the evacuees had slightly higher class room attendance than their Swedish peers.

the estimates of β remain stable to the inclusion of additional biological family background variables. Removing all biological family characteristics from the specification should also not affect the estimates of β. In column 1 (columns 2 and 3) of Table E-3 in online Appendix E, I show that the coefficient that corresponds to foster family input remains robust to excluding (including) biological family characteristics.

B. *Recall Bias*

Even though preintervention data on biological father's occupation is available in the evacuation cards, I have chosen to use survey data for both foster and biological father's occupation to ensure comparability of the two variables. A potential source of bias when dealing with retrospective survey data is recall bias. The main concern is that individuals with high education have a systematically upward biased recollection of their foster parent's socioeconomic background. I control for this by testing whether the children who pursued the academic track after fourth grade of elementary school differ from the group who pursued the vocational track with respect to the discrepancy in childhood SEI from the government records and from the survey. First, it deserves mentioning that in 86 percent of the cases, father's occupation was identical in the government records and the survey. Second, I fail to reject the null hypothesis of no significant mean difference in a recollection dummy (no discrepancy $= 1$) between the two groups ($P = 0.73$) (the first row in columns 1 and 2 of Table E-4 in online Appendix E reports the summary statistics for the recollection dummy for both educational groups).

V. Conclusions

This paper exploits a unique event in which almost 50,000 Finnish children were evacuated during World War II and were placed in Swedish foster families for an average period of two years. The operation creates a rare opportunity to study how the variation in the rearing environment affects schooling outcomes in a setting where confounding of biological background is substantially mitigated.

The findings in this paper suggest that children who were placed in foster families of higher social class were more likely to continue to secondary school and were also more likely to obtain a university degree. This result is not sensitive to controlling for background characteristics. When splitting the data into subsamples, I find that higher foster family input has a larger effect on girls than it has for boys, a pattern that seems to repeat itself elsewhere in the literature on the impact on early life conditions on schooling outcomes. In line with what previous research has found, my results support the hypothesis that an intervention has larger effects for the younger age groups. The novel result that this paper provides is that a relatively short lasting switch in the early childhood environment may have a substantial effect on later-life outcomes.

Ideally, one would like to know through which mechanisms the temporary switch in childhood socioeconomic environment affected schooling. On one hand, both school track choice and the completion of a university degree may be explained by

aspects related to the quality of the school attended during evacuation in Sweden. School curriculum, teacher quality, and peer effects may have led to differences in performance levels, which in turn may explain differentials in school track choice and transitions to tertiary education. On the other hand, it is equally likely that a child placed in a foster family of higher socioeconomic class than the one represented by her own family background may have developed a taste for the "good life" during her stay. This may have motivated her to emulate her peer's and foster family's attitudes toward scholastic achievement. Such an "aspiration" effect may lead to differentials in school participation even when school performance is held constant. The relatively large estimates of foster family SEI may be explained by a combination of the "school quality" effect and the "aspiration" effect as the evacuation not only implied a change in family socioeconomic status but in almost all covariates related to childhood environment.[22] In this sense, evacuation along the same lines of reasoning as adoption in Sacerdote (2007), may be seen as an upper bound on interventions that exogenously improve the socioeconomic rearing environment.

The findings in this paper have implications that I believe are generalizable to other contexts than the Finnish child evacuations. First, the question of how and at what age to best remediate the achievement gaps between children from different socioeconomic backgrounds is still open and debated over. My findings suggest that early childhood interventions may not necessarily need to be long lasting to have important effects. A two-year intervention into a child's environment may make a substantial difference for the schooling outcomes of the child. Second, remedies to close achievement gaps between children from different socioeconomic backgrounds seem to be most efficient when targeted towards children in their very early stages of childhood.

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[22] The "school quality" effect and the "aspiration" effect may be subsumed under the sociologist Raymond Bodoun's conception of primary (selective performance levels) and secondary effects (group specific schooling aspirations) of social origin on school participation (Boudon 1974).

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