

Cumulative Childhood Adversity and Long-Term Educational Outcomes in Individuals with Out-of-Home Care Experience: Do Multiples Matter for a Population Defined by Adversity?

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Abstract

Previous research has demonstrated a graded relationship between cumulative childhood adversity and adverse later outcomes. Individuals with out-of-home care (OHC) experience constitute a population characterised by both childhood and educational disadvantages. Based on a fifty-year follow-up of a Stockholm cohort born in 1953, the purpose of this study was to examine the associations between cumulative childhood adversity and long-term educational outcomes in this group. The cumulative disadvantage perspective suggests that there would be a negative association, while the disadvantage saturation perspective implies that cumulative adversity would be less consequential for disadvantaged individuals. By means of multigroup path analysis, we furthermore asked whether this association may differ in relation to individuals with child welfare contact (CWC) and to the general population (GP). Adjusting for socioeconomic conditions and cognitive ability, cumulative childhood adversity had a negative influence on midlife educational attainment in the GP. However, it did not seem to influence the educational outcomes of neither OHC experienced individuals nor individuals with other types of CWC. The results of this study thus lend support to the disadvantage saturation perspective. Further studies are needed to explore this relationship.

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Introduction

The needs of children at risk continue to be a prominent issue in the field of child and family social work policy and practice. Recently, there has been an increasing interest into the notion that ‘multiples matter’, referring to how early adversities such as abuse, neglect and household dysfunction realise across the life course (Spratt, 2012; Larkin *et al.*, 2014; Spratt *et al.*, 2019).

Conforming to cumulative (dis)advantage theories (Dannefer, 2003; DiPrete and Eirich, 2006), previous studies have found that childhood adversities tend to cluster and that cumulative childhood adversity often displays a graded relationship to later adverse outcomes (Turner and Lloyd, 1995; Felitti *et al.*, 1998). Examples include somatic health problems and premature death (Felitti *et al.*, 1998; Jackisch *et al.*, 2019), mental health problems (Björkenstam *et al.*, 2016, 2017), substance misuse (Dube *et al.*, 2003; Kendler *et al.*, 2012), unemployment and low educational attainment (Metzler *et al.*, 2017; Hardcastle *et al.*, 2018). Cumulative childhood adversity and related constructs have therefore been pointed out as a useful framework for highlighting the public-health importance of exposure to early disadvantages and for informing prevention and intervention within social work (Spratt, 2012; Larkin *et al.*, 2014; Spratt *et al.*, 2019).

However, while cumulative childhood adversity has received a large amount of research attention, less attention has been directed at examining how this effect may vary for at-risk groups and populations defined by early-life disadvantages, such as children placed in out-of-home care (OHC).

OHC is a far-reaching social intervention targeting children who are abused or neglected by their parents or adolescents with antisocial behaviour (Fernandez and Barth, 2010). As such, OHC experience may be seen as a marker for childhood adversity in itself. Furthermore, children in OHC often come from disadvantaged family socioeconomic conditions (Franzen *et al.*, 2008) and childhood adversity is generally socially patterned (Walsh *et al.*, 2019). Though limited, prevalence studies found that individuals with experiences of OHC are more likely to have been exposed to different types of childhood adversities compared to general population (GP) peers (Turney and Wildeman, 2017).

In line with previous research, there are good reasons to expect that childhood adversity will have a cumulative effect on OHC experienced individuals' later outcomes. Still, it is also reasonable that disadvantaged groups may be less affected by additional strains. From a disadvantage saturation perspective, the level of disadvantage could reach a point of saturation, at which individuals have little left to lose in terms of opportunities for the future (Hannon, 2003). The disadvantage saturation hypothesis thus suggests that the association between childhood adversities' and later life outcomes may be weaker among OHC experienced individuals.

Previous studies on individuals with OHC experience have found support for links between cumulative childhood adversity and poor outcomes in young adulthood including economic hardship (Lif *et al.*, 2017), emotional and psychosocial problems (Bruskas and Tessin, 2013; Escueta *et al.*, 2014; Rebbe *et al.*, 2017) and overall health problems (Rebbe *et al.*, 2018). Interestingly, a longitudinal study on youth ageing out of foster care did not find support for an association between cumulative childhood adversity and educational outcomes in terms of having completed high school or having any college experience in young adulthood (Rebbe *et al.*, 2017).

It is well established that OHC experienced individuals tend to perform poorly in school and within the educational system (Trout *et al.*, 2008; Berlin *et al.*, 2011; Pears *et al.*, 2018). While a systematic review identified seventy different explanatory factors (O'Higgins *et al.*, 2017), recent studies suggest that their educational disadvantage to a large extent can be understood by mainstream theories of educational stratification (Forsman, 2020; Brännström and Stenberg, 2021).

The purpose of this study is to examine the associations between cumulative childhood adversity and long-term educational outcomes in individuals with OHC experience. Through path analysis of prospective data from a fifty-year follow-up of a Stockholm cohort born in 1953, of which around 9 percent have been placed in OHC, we ask whether the association between OHC experience and long-term educational outcomes can be explained by the individual's cumulative exposure to childhood adversity, or if the accumulation of adversities is less consequential in this disadvantaged group. The empirical answer to this question may inform intervention policies and measures that better meet the needs of this at-risk group.

Long-term educational outcomes are here defined as midlife educational attainment. The current cohort grew up in a time of educational expansion during which the Swedish educational system gradually changed from an elitist to a more inclusive system with, for example, second learning chances for adults (Arnesen and Lundahl, 2006; OECD, 2016). The possibilities for educational recovery across adulthood thus make the study's life course approach to educational attainment particularly relevant.

Since the data do not include information about abuse and neglect, our conceptualisation of childhood adversity is restricted to exposures to different types of household dysfunction. Inspired by the definition of household dysfunction in the American landmark Adverse Childhood Experience studies (Felitti *et al.*, 1998; Anda *et al.*, 1999), we include register-based indicators of parental divorce, parental alcohol misuse, parental divorce, parental mental illness and paternal criminality. But we also consider indicators of parental death (Nickerson *et al.*, 2013) and household poverty (Hughes and Tucker, 2018).

To the best of our knowledge, this study represents the first attempt at examining OHC experienced individuals' midlife educational outcomes within a cumulative childhood adversity framework. Furthermore, to account for selection processes into care, OHC experienced individuals' pathways will not only be contrasted to GP peers, but also to a group who have been involved with the child welfare system without being placed in OHC.

Methods

Data

The study used data from the prospective Stockholm Birth Cohort Multigenerational Study (SBC Multigen), created through a probability matching of two anonymised longitudinal data materials: the Stockholm Metropolitan Study (SMS) and RELINK53. The SMS is defined as everyone born in 1953, who was living in the greater Stockholm metropolitan area 10 years later ($n = 15,117$; see Stenberg, 2018 for a description of the project's methodology and historical context). Survey and register data were collected until 1986, when the SMS was deidentified. RELINK53 is defined as all individuals born 1953 living in Sweden in 1960, 1965 and/or 1968, as well as their family linkages ($n = 2,390,753$), and comprises register data from 1953 to 2018. Based on variables identical to both data materials, 14,608 individuals from SMS were matched with RELINK53, resulting in the SBC Multigen (Almquist *et al.*, 2020).

The Stockholm Regional Ethical Review Board approved the creation of the SBC Multigen and this study (no. 2016/481–31/5; 2017/34–31/5). Written informed consent was not required due to the anonymised nature of the data material.

Study population

The study population consists of the 13,425 cohort members who were alive at age fifty (2003) and had information on educational attainment

at the same point in time. Information from the Social Register was utilised to define three mutually exclusive groups based on the type of child welfare involvement between birth and age nineteen (1953–1972):

1. ‘Out-of-home care (OHC)’ ($n=1,251$, 9.3 per cent): Individuals who were placed in OHC. A majority (78.9 per cent) had their first placement before the age of thirteen. Furthermore, while placement duration is often unspecified, it is estimated that most experienced short-term placements (<two years).
2. ‘Child welfare contact (CWC)’ ($n=1,501$, 11.2 per cent): Individuals who were investigated by the child welfare services, but never placed in OHC. The vast majority (82 per cent) were first investigated as teenagers. A minority (15.3 per cent) received in-home services while the rest did not receive any child welfare measures (i.e. not substantiated investigation).
3. ‘General population’ ($n=10,673$, 79.5 per cent): Individuals without any child welfare involvement.

In the 1950s and 1960s, the Swedish child welfare system was characterised by a strong belief in the preventive abilities of OHC (Vinnerljung, 1996), which is reflected in a high OHC prevalence in the 1953 cohort, especially among younger children. In comparison, the national OHC prevalence among cohorts born 1990–1995 is around 5 per cent and most of them had their first placement as teenagers (Berlin, 2020). There are no comparable official statistics on the prevalence of other types of child welfare involvement.

As today, reasons for OHC and other types of child welfare involvement could be related to neglect, alcohol misuse and mental health problems in the birth family as well as children’s own antisocial behaviour. However, presumed maternal immaturity (teenage mothers), unsatisfactory housing and poverty could also cause child welfare interventions (Vinnerljung, 1996) while reasons related to abuse, family violence, maternal substance misuse or serious parental criminality are more common today (Khoo *et al.*, 2012).

Variables

The outcome is midlife ‘educational attainment’ and reflects pseudo-years of education at the age of fifty years (2003). It corresponds to the number of years typically related to the highest level of education (seven levels ranging from incomplete compulsory school to post-graduate education) registered in the Longitudinal Integration Database for Health Insurance and Labour Market Studies. For example, upper secondary education, maximum two years would be equivalent to eleven pseudo-years of education (nine years compulsory school + two years upper secondary school).

The educational system during the principal schooling years of the 1953 cohort was repeatedly reformed into a more egalitarian system. Compared to the present system it was nevertheless characterised by more tracking. The ninth and final year of compulsory school was divided into academic and vocational streams. This division was furthermore partly based on choices made by the pupils in sixth grade. Following compulsory school completion, around half of the cohort proceeded with upper secondary education. Today virtually all Swedish pupils continue directly to upper secondary school. However, a tuition-free adult education system was introduced in 1968, which enabled cohort members to complete and/or make up their qualifications in adulthood.

Six indicators of childhood adversity were selected based on operationalisations in previous Swedish register-based studies on childhood adversity (e.g. Björkenstam *et al.*, 2016; Lif *et al.*, 2017; Jackisch *et al.*, 2019) and available records in the data material: parental divorce, parental alcohol misuse, parental mental illness, paternal criminality, parental death and household poverty. All indicators were indexed (one count for each indicator with which a cohort member presented) and summed to create a cumulated ‘childhood adversity’ composite score with a possible value between 0 and 6.

Information on ‘parental divorce’ was retrospectively derived from the 1960 and 1970 Censuses and refers to circumstances when the cohort member was zero to seventeen years (1953–1970). All other indicators were recorded between ages zero and nineteen years (1953–1972). ‘Parental alcohol misuse’ was indicated if a parent was registered in either the National Criminal Register or the Social Register as having been convicted for drunk driving or drunkenness multiple times (including institutional treatment or action by the temperance committee). ‘Parental mental illness’ was assessed by a record in the Social Register for a parent having symptoms of mental illness or psychiatric problems as well as a record of suicide in the Causes of Death Register. ‘Paternal criminality’ refers to any record of incarceration in the National Crime Register (data for maternal criminality were not available). ‘Parental death’ refers to parental death according to the Causes of Death Register. ‘Household poverty’ was operationalised as records in the Social Register of means-tested family social assistance reciprocity, that is financial benefits, for at least five years (mean 0.97 years), regardless of the amount.

Covariates include sex, occupational class, family education and cognitive ability. The cohort member’s biological sex is indicated by the dummy variable *female* (yes = 1/no = 0). ‘Occupational class’ (typically of the father) was recorded at the cohort member’s birth (1953) and either retrieved from the Delivery Records or the Stockholm Population Register. The variable consists of five categories where higher values

indicate higher occupational prestige as follows: (i) working class, unskilled worker; (ii) working class, skilled worker; (iii) lower-middle class, entrepreneur; (iv) lower-middle class, officials and non-agricultural employees; and (v) upper and upper-middle class. ‘Family education’ based on information in the 1960 Census, indicates whether at least one household member in the birth family had graduated from upper secondary school or equivalent (yes = 1/no = 0) when the child was seven years. ‘Cognitive ability’ was recorded through the total number of points on three subtests (verbal, spatial and numerical) taken by the cohort members in a School Study Survey at the age of thirteen years (1966). Each subtest had 40 tasks, making 120 the highest possible score.

Statistical analysis

Descriptive statistics were conducted, including bivariate comparisons of the OHC and the other two groups with results from two-sample tests of proportions/means (Table 1). Correlations between the study variables (included in the path model) were estimated for the sample as a whole, and for the three groups separately.

Multigroup path analysis within a structural equation modelling (SEM) framework was used to explore the association between

Table 1. Sample characteristics, proportions/means, by group

Variable	Age, Min–max		Group 1 OHC ^a		Group 2 CWC ^b		Group GP ^c		Difference 1 versus 2	Difference 1 versus 3
	Mean	SD	Mean	SD	Mean	SD				
Educational attainment	50	6–19	11.27	2.17	11.18	2.16	12.59	2.26	0.09	–1.31***
Childhood adversity	0–19	0–6	1.25	1.28	0.68	1.02	0.24	0.58	0.58***	1.01***
Parental divorce	0–17	0–1	0.27	–	0.16	–	0.08	–	0.11***	0.19***
Parental alcohol misuse	0–19	0–1	0.21	–	0.13	–	0.03	–	0.08***	0.18***
Parental mental illness	0–19	0–1	0.27	–	0.12	–	0.03	–	0.15***	0.24***
Paternal criminality	0–19	0–1	0.06	–	0.03	–	0.01	–	0.03***	0.05***
Parental death	0–19	0–1	0.12	–	0.08	–	0.05	–	0.04***	0.07***
Household poverty	0–19	0–1	0.33	–	0.15	–	0.04	–	0.17***	0.29
Cognitive ability	13	0–120	59.70	18.52	63.07	17.67	70.12	17.54	–3.37***	–10.42***
Family education	7	0–1	0.11	–	0.14	–	0.31	–	–0.03*	–0.20***
Occupational class	0	1–5	2.36	1.23	2.53	1.32	3.04	1.39	–0.17***	–0.68***
Sex: Female	0	0–1	0.47	–	0.26	–	0.53	–	0.22***	–0.06***

^aOHC, *n* = 1,251.

^bCWC, *n* = 1,501.

^cGP, *n* = 10,673.

p* < 0.05, **p* < 0.001.

SD, standard deviation.

cumulative childhood adversity and midlife educational attainment and to examine differences in path coefficients across the three groups with different levels of child welfare involvement, that is OHC, CWC or no child welfare involvement (GP). The hypothesised model was: paths from sex (female), occupational class and family education to cognitive ability and childhood adversity, respectively (these were allowed to correlate), and paths from all of these variables to educational attainment.

The analysis was carried out in three steps: first, an unconstrained model in which all parameters were allowed to differ across groups was performed. Secondly, a series of Wald's tests were performed to determine if any of the parameters were significantly different across groups, that is if any predictor was more or less important in any group. Last, a constrained model was performed, in which parameters that were not statistically different ($p > 0.05$) across groups were constrained to be equal across groups (Acock, 2013).

Estimation for all models was performed using full information maximum likelihood (FIML) to account for missing data. FIML identifies the parameter values with the highest probability of producing the sample data based on all available data (complete and incomplete) and is considered superior to traditional listwise approaches (Enders, 2010). Complete data were available for all variables except for occupational class, family education and cognitive ability which had missing values for 3.2 percent, 6.0 percent and 10.3 percent of the observations, respectively. Using complete cases only, would have reduced the effective sample by around 17 percent.

Multiple indices were used to assess the model fit to the data, including the chi-square (χ^2) test of model fit, the comparative fit index (CFI), the Tucker–Lewis Index (TLI) and the root mean square error of approximation (RMSEA). Adequate model fit is generally indicated by a non-significant χ^2 , CFI/TFI > 0.95 and RMSEA < 0.06 (Hu and Bentler, 1999).

The path models were estimated with the SEM function in Stata/MP 16.0. All variables, except for sex (female) and family education, were treated as continuous. Both standardised and unstandardised estimates were obtained.

Results

Descriptive statistics

Table 1 provides descriptive statistics for the three groups, including bivariate comparisons of the OHC and the other groups with results from two-sample tests of proportions/means. Compared to the GP, individuals in the OHC group had significantly fewer pseudo-years of education at

the age of fifty years. However, their midlife educational attainment was similar to individuals in the CWC group.

The OHC group had a substantially higher childhood adversity composite score as well as higher levels for each individual indicator of childhood adversity compared to the other groups. The lowest level of childhood adversity was found in the GP. The exposure to childhood adversity thus followed a gradient pattern in relation to the level of child welfare involvement.

Similar patterns also hold for cognitive ability, family education and occupational class, that is the OHC group had lower cognitive ability and came from more socioeconomically disadvantaged families than the CWC group and the GP in particular. The sex distribution also varied across groups with the largest share of females in the GP and the smallest share in the CWC group.

Table 2 reports bivariate correlations among variables included in the multigroup path model. As shown, cumulative childhood adversity is negatively associated with midlife educational attainment in the full sample and across groups, that is, higher levels of childhood adversity predict lower levels of educational attainment. However, the association is somewhat weaker in the OHC and CWC groups compared to the GP. Although the associations between sex (female) and the other variables do not seem to follow a persistent pattern, the other variables were correlated in the expected direction in both the full sample and across groups, with varying levels of strength.

Multigroup path analysis

Table 3 reports unstandardised and standardised coefficients by groups for each direct path to cognitive ability, cumulative childhood adversity and midlife educational attainment, respectively along with measures of goodness of fit. The left part of the table shows the results of the unconstrained multigroup path model in which all parameters were allowed to differ over groups. Although the χ^2 value was large and significant ($\chi^2(9) = 32.53$, $p < 0.01$), other fit indices suggested a good model fit (RMSEA = 0.02; CFI = 1.00; TLI = 0.98). The percentages of variance in educational attainment explained by this model were 20, 17 and 26 percent in the OHC, CWC and GP group, respectively.

As shown, some of the coefficients appear to be different across groups, that is, they seem to matter more or less in different groups. A series of Wald's tests were performed to determine if any of the parameters were significantly different ($p < 0.05$). None of the paths going to cognitive ability were. However, sex (female) and family education as predictors of cumulative childhood adversity were significantly different

Table 2. Bivariate correlations among variables included in the multigroup path model, full sample and by groups

Variables	1.	2.	3.	4.	5.	6.
1. Educational attainment	–	–	–	–	–	–
2. Childhood adversity	-0.17*** -0.08**/-0.06* /-0.12***	–	–	–	–	–
3. Cognitive ability	0.44*** 0.39**/0.35*** /0.43***	-0.16*** -0.14**/-0.10*** /-0.10***	–	–	–	–
4. Family education	0.34*** 0.21***/0.22*** /0.34***	-0.18*** -0.15***/-0.10*** /-0.15***	0.27*** 0.16***/0.20*** /0.26***	–	–	–
5. Occupational class	0.34*** 0.19***/0.21***/0.33***	-0.15*** -0.12***/-0.08**/-0.11***	0.27*** 0.17***/0.21***/0.26***	0.57*** 0.34***/0.47***/0.58***	–	–
6. Sex: Female	0.06*** 0.10***/0.12***/0.01	0.00 0.01/0.17***/0.02*	-0.06*** -0.09**/-0.05/-0.09***	-0.00 -0.01/-0.02/-0.03**	0.00 -0.01/-0.02/-0.02*	–

Note: Boldface correlations are for full sample (n = 13,425). Correlations by groups are listed beneath full sample correlations (OHC, n = 1,251/CWC, n = 1,501/GP, n = 10,673).

* p < 0.05, ** p < 0.01, *** p < 0.001.

Table 3. Summary table for the multigroup results

Relationship	Unconstrained solution			Constrained solution				
	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3		
	OHC ^a	CWC ^b	GP ^c	OHC ^a	CWC ^b	GP ^c		
B	β	B	β	B	β	B	β	
Cognitive ability								
Family education	6.41***	0.12***	5.15***	6.48***	6.48***	6.48***	0.13***	6.48***
Occupational class	1.79***	0.12***	1.96***	1.99***	1.99***	1.99***	0.15***	1.99***
Sex: female	-2.72*	-0.07*	-2.82***	-2.74***	-2.74***	-2.74***	-0.07***	-2.74***
Childhood adversity								
Family education ^d	-0.49***	-0.12***	-0.17***	-0.58***	-0.26**	-0.16***	-0.09**	-0.13***
Occupational class	-0.08**	-0.08**	-0.01*	-0.01**	-0.01**	-0.01**	-0.02**	-0.03**
Sex: female ^d	0.03	0.01	0.02*	0.03	0.40***	0.02*	0.17***	0.02*
Educational attainment								
Childhood adversity ^d	-0.01	-0.00	-0.17***	-0.01	-0.06	-0.17***	-0.03	-0.04***
Cognitive ability ^d	0.04***	0.36***	0.05***	0.04***	0.04***	0.05***	0.37***	0.35***
Family education	0.89***	0.13***	0.73***	0.74***	0.61***	0.74***	0.12***	0.74***
Occupational class ^d	0.14***	0.08**	0.15***	0.16**	0.23***	0.25***	0.09***	0.15***
Sex: female ^d	0.54***	0.12***	0.22***	0.54***	0.73***	0.22***	0.15***	0.22***
R ² cognitive ability	0.05	0.06	0.10	0.05	0.06	0.05	0.05	0.09
R ² childhood adversity	0.03	0.04	0.02	0.02	0.04	0.02	0.04	0.02
R ² educational attainment	0.20	0.17	0.26	0.19	0.17	0.19	0.17	0.26
χ ² overall								
RMSEA		0.02						
CFI		1.00						
TLI		0.98						
		df = 9, 32.53, p < 0.01			df = 10, 7.83, p = 0.65			
		0.02			0.00			
		1.00			1.00			
		0.98			1.00			

Note: B = unstandardised coefficients. β = standardised coefficients.^aOHC, n = 1,251.^bCWC, n = 1,501.^cGP, n = 10,673.^dSignificantly (p < 0.05) different across groups. *p < 0.05, **p < 0.01, ***p < 0.001.

across groups. Also, with the exception of family education, all direct paths to midlife educational attainment differed significantly.

The right part of Table 3 presents the results from a re-estimation of the model, in which each of the parameters that were not statistically different across groups was constrained to be equal. Constraining parameters slightly decreased the explanatory power to predict educational attainment in the OHC group (from 20 to 19 percent), while the explained share of variance in the other groups did not change. Still, compared to the unconstrained solution, this model provided a better fit to the data ($\chi^2(10) = 7.83$, $p = 0.65$; RMSEA = 0.00; CFI = 1.00; TLI = 1.00).

The graphical results (standardised coefficients) for the final multi-group path analysis (constrained solution) are presented by groups in Figure 1. Cognitive ability is predicted by the cohort members' biological sex and socioeconomic conditions in the family. Results show that the negative influence of female is rather similar across groups. However, the strength of the positive influence of family education and occupational class follows a gradient pattern in relation to the level of child welfare involvement, that is, the relationship is strongest in the GP and weakest in the OHC group.

Cumulative childhood adversity is predicted by the same set of variables. As shown in the figure, sex (female) does not have a statistically significant influence among individuals in the OHC group. The relationship is positive in the other groups, that is females exhibit higher rates of childhood adversity and the predictive power is especially strong in the CWC group. Overall, more advantaged socioeconomic positions significantly predict lower levels of childhood adversity. The influence of occupational class follows a similar gradient pattern as in the previous equation, that is, the predictive power is strongest in the GP and weakest in the OHC group. The negative influence of family education on childhood adversity is rather similar in the OHC and GP group, but substantially weaker in the CWC group.

There are also variations in the direct paths to midlife educational attainment from all previously mentioned variables. In all groups, being female predicts higher educational attainment, but the positive influence is particularly strong in the CWC group and weakest in the GP. Advantaged socioeconomic conditions in the birth family and higher cognitive ability in particular, are also associated with higher educational attainment. Differences across groups include a larger positive influence of family education and occupational class in the GP compared to the other groups. The positive influence of cognitive ability is strongest in the OHC group and weakest in the CWC group. Furthermore, while cumulative childhood adversity is negatively associated with midlife educational attainment in the GP, results show that it does not have a significant influence in the other groups. Put differently, when controlling for biological sex, cognitive ability and socioeconomic conditions in the birth family, higher levels of

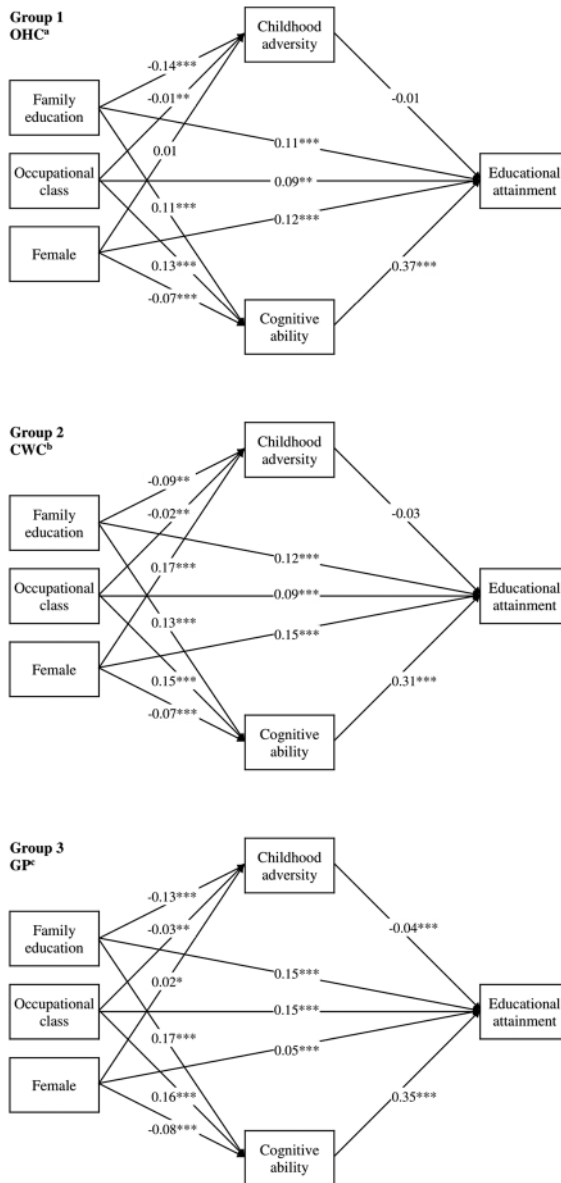


Figure 1: Multigroup path diagram, standardized path coefficients (constrained solution). *Note:* ^aOHC, $n = 1,251$. ^bCWC, $n = 1,501$. ^cGP, $n = 10,673$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Covariances and error terms have been omitted.

childhood adversity do not seem to influence the educational attainment of neither OHC experienced individuals nor persons who have come in contact with the child welfare system without being placed.

Discussion

Using data from a Stockholm cohort born in 1953, this study examined the association between cumulative childhood adversity and long-term educational outcomes in OHC experienced individuals. We asked whether their midlife educational attainment could partly be explained by cumulative childhood adversity or if long-term educational outcomes in this disadvantaged group would be less affected by additional strains, in line with a disadvantage saturation perspective. By means of multigroup path analysis, we furthermore explored whether and how this association may differ in relation to individuals with CWC and GP peers.

In line with previous research on OHC experienced individuals' educational outcomes (Trout *et al.*, 2008; Berlin *et al.*, 2011; Pears *et al.*, 2018), the results showed that the OHC group had lower midlife educational attainment than their GP peers. Still, their educational outcomes were similar to the CWC group. Comparing the OHC group to another group within the child welfare population might buy some protection against selection bias, that is, they are more alike on observable and unobservable factors that influence both child welfare involvement and educational outcomes.

Moreover, the findings showed that while the accumulation of childhood adversities had a negative influence on midlife educational attainment in the GP, it did not seem to influence the educational outcomes of neither OHC experienced individuals nor individuals with other types of child welfare involvement during childhood. Similar to a previous study on the relationship between childhood adversity and educational outcomes in young adulthood in this particular group (Rebbe *et al.*, 2017), our findings thus lend support to the disadvantage saturation perspective (Hannon, 2003). In other words, with regard to educational attainment, the accumulation of childhood adversity seems less influential in a population in which early disadvantages are highly salient. Put differently, child welfare involvement could in itself be seen as a marker for educational disadvantage in midlife.

Previous studies based on GP samples have found that the associations between cumulative childhood adversity and educational outcomes are weakened when controlling for socioeconomic conditions (Houtepen *et al.*, 2020; Pitkänen *et al.*, 2021). This study, furthermore, took the individuals' cognitive ability into account, a factor which is generally strongly related to educational outcomes (Deary *et al.*, 2007). Nevertheless, the inclusion of such predictors in our model does not explain why cumulative childhood adversity was associated with midlife educational attainment in the GP, but not in individuals with OHC experience or other types of child welfare involvement.

Prior studies suggest that disruptions and delays in care experienced individuals' educational pathways are common (for example, [Brady, 2020](#)). Education systems that are flexible and based on ideas of life-long learning may thus offer better opportunities for enhancing their educational outcomes ([Gilligan, 2019](#)). A recent study on the current cohort found that opportunities to resume studies in adulthood had played a particularly important role in the educational careers of individuals involved with the child welfare system. Hence, it is possible that the inclusive Swedish educational system has ameliorated the negative impact of adversities in the OHC and CWC groups over the life course, but we refrain from making further speculations at this point.

Childhood adversity research focused on high-risk groups and populations characterised by early-life disadvantages is still at a relatively early stage. While the notion that early adversities increase the probability for later poor life outcomes offers a convenient explanation to different developmental pathways, the simplicity of this framework could also be seen as its limitation ([Lacey and Minnis, 2020](#)). The effects of early disadvantages on future outcomes have been established to function through multiple pathways including both biological and ecological ([Shonkoff *et al.*, 2012](#)). However, like other studies employing a cumulative childhood adversity score, this study assumes equal weighting of different adversities and offers no insights into the mechanisms through which the measured adversities might—or might not—lead to poorer educational outcomes.

Given this and previous studies' support for a graded relationship between childhood adversity and other types of adverse outcomes in individuals with OHC experience ([Bruskas and Tessin, 2013](#); [Escueta *et al.*, 2014](#); [Lif *et al.*, 2017](#); [Rebbe *et al.*, 2017, 2018](#)), it seems premature to assume that cumulative childhood adversity may not contribute to our understanding of their educational disadvantage over the life course. A more nuanced approach to the composition of adversities within this vulnerable population may provide further insights into this relationship, for example, by determining whether there are clustering of adversities (i.e. different subgroups) and whether these are associated with differential educational trajectories—findings which may better inform prevention and intervention in social work policy and practice. Still, it is also possible that other aspects than accumulation, for example the timing and duration of specific exposures, may be important in understanding the links between childhood adversity and educational attainment in OHC experienced individuals.

Strengths and limitations

Strengths of this study include its prospective design with a long follow-up time and the large sample size with a possibility to differentiate

OHC experienced individuals to both the GP and to individuals who have come in contact with the child welfare system without being placed. While the use of administrative register-based data could be seen as a strength, it is also a limitation. The exploration of the usefulness of cumulative childhood adversity for understanding OHC experienced individuals' educational disadvantage is restricted to the information in the registers. Most importantly, we lack data on exposure to different types of abuse and neglect.

Furthermore, while parental death and divorce can be assessed with a high level of certainty, the other types of childhood adversities are based on less objective measures. Criminal data were not available for the mothers. For those never involved with the social services, parental alcohol misuse and mental illness might have been underreported. Additionally, none of the measures account for the cohort members' subjective experiences of these exposures. The latter could be particularly problematic for children placed in OHC. Since they were removed from their birth families and spent some time of their childhood in foster family-based and/or institutional care, we cannot certainly say that they have been directly exposed to all adversities for which we have records of. Likewise, they could have been exposed to adversities in the care setting for which we lack information.

It should also be noted that at age 50, the mortality in the OHC and CWS groups has been much higher than in the GP. In other words, selection through survivorship is also an issue that should be mentioned—it could mean that the estimates of childhood adversities in these groups suffer from downward bias while their educational outcomes might be biased upwards. Yet another limitation is that this study was not able to address heterogeneity within the OHC population.

Conclusions

The results of this study indicate that the level of childhood adversity in individuals with OHC experience—a population defined by adversity—does not contribute to our understanding of the variation in their long-term educational outcomes. The study furthermore suggests that placement in OHC and other types of child welfare involvement are strong indicators of midlife educational disadvantage by themselves. However, a more nuanced approach to adversities within this group may provide further insights into this relationship.

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