



# Economics of Adverse Childhood Treatment

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## Abstract

The individuals' well-being throughout their entire lives depends on their initial inherited endowments, on their/their parents' subsequent investments and actions as well as on the environment in which they grow, act, and live. The recent literature in various fields, starting with the epidemiological/psychological one but also the sociologic and economic research, point out that early life (childhood and adolescence) is crucial in determining a set of late life outcomes, from health to education, socioeconomic status, income, etc. In this sense, adverse events/trauma in these life stages become of paramount importance since, from an economics perspective, they can be assimilated to "negative" investments. Indeed, a continuously extending literature documents that adverse childhood and adolescence experiences (ACEs) are associated with poor physical and mental health, unhealthy life styles, poor schooling performances, lower levels of education, higher unemployment, and lower income, with extremely high economic burden for the individuals and the society. Such evidence calls for

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sound and targeted policy interventions that to prevent adverse events in early offspring's lives and to mitigate and correct as much as possible the negative effects for those children that were subject to trauma.

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## Introduction

The well-being of individuals and several crucial dimensions of their lives, such as health status, human capital, employment status, and economic resources, are the joint result of their initial, genetically inherited, endowments and subsequent investments or actions. Furthermore, individuals experience different events during their lives, which may be “exogenous,” i.e., not caused by their decisions. The surrounding environment interacts with the different socioeconomic dimensions of life, so a successful life may be due to a complex dynamic interaction of genes, events, and actions. From a socioeconomic perspective, this is a crucial point, as the effectiveness of policies, aimed at reducing inequality and promoting growth, depends on the extent to which human capital and other individuals' achievements (employment, socioeconomic status, income, etc.) are shaped by nongenetic factors. Scientific research has referred to this as the “nature and nurture” dilemma.

Early attempts to solve the dilemma mostly investigate behavioral genetics and psychology. Becker and Tomes (1986) were among the first economists to recognize the complexity of this issue and proposed a model that analyses the intergenerational mobility of earnings, assets accumulation, and consumption. More recently, the seminal work by Cunha and Heckman (2007) represents a landmark in the economic literature in the attempt to disentangle the long-term effects of early childhood conditions. This line of research has made significant progress in assessing the role played by determinants that are beyond the control of the individual, such as their genetic imprinting or childhood conditions, along with the role played by environmental factors or unforeseen events. The important contribution by Cunha and Heckman is to show that there are different phases in human-capital formation over the life course and that investments made (by children or by their parents) in early childhood are “complements” for any other activity aimed at improving possibilities, knowledge, and opportunities later in life. The authors focus on drivers such as gaps in individuals' abilities, which appear at very early ages, and intellectual/cognitive/human development at critical ages. Early interventions on these drivers in favor of disadvantaged children have large and significant effects on their future development.

Adverse childhood trauma is a relevant part of this research field, which can help design policies aimed at contrasting the effects of adverse conditions – especially early in life – and ultimately mitigate some drivers of inequalities that are observed in society.

In this chapter, a broad view of the economic effects of adverse childhood conditions are proposed. On the one hand, there are direct socioeconomic implications of adverse childhood treatment that can be associated with underdevelopment

of human capital of the individual, in turn hampering economic opportunities such as employment and participation later in life. On the other hand, there are more subtle effects that not only reduce working capacity or the capacity to take economic decisions but also reduce the full development of the individual in her adulthood, for example, in terms of social networks and family life or in terms of behavioral risks. The latter represent costs to society that might emerge through an increased cost for the health care system, but also in terms of enhanced inequalities. These are on top of the immediate economic cost of treating children that suffered from these traumas, when detected.

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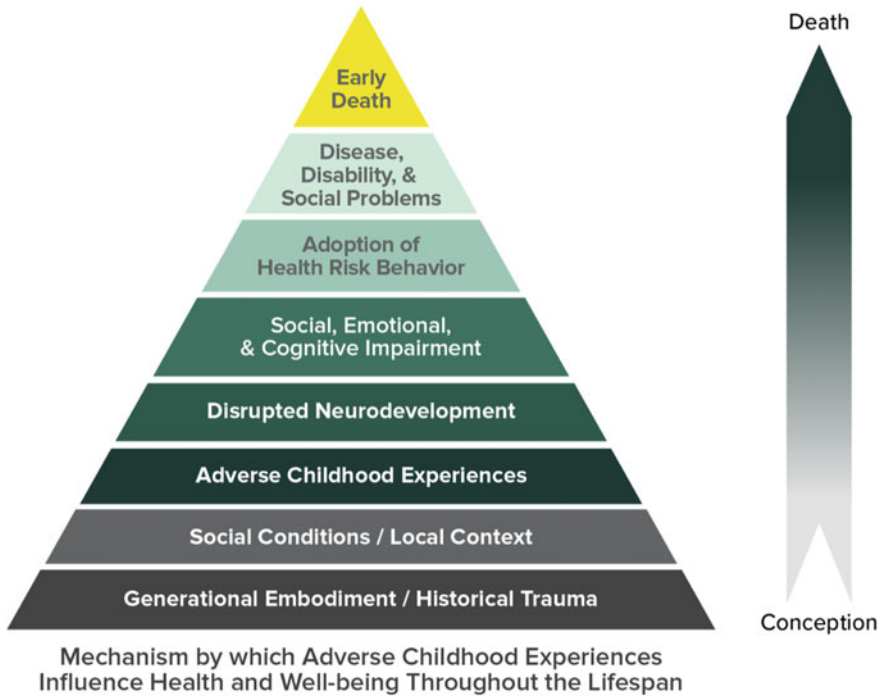
## Adverse Childhood Experiences: Definition and Evidence

Adverse childhood experiences (ACEs) represent traumatic events in early individuals' lives, generally considered from birth up to the age of 17–18 years. They include a large number of negative events or environmental conditions “that can undermine children’s sense of safety, stability and bonding” (Centers For Disease Control and Prevention), among which are abuse (emotional, physical, or sexual), neglect (either physical or emotional), violence, substance use, mental health, parents separation and divorce, parents’ incarceration, etc. Undergoing any such trauma may have multiple implications on the entire life course of individuals.

The potential impact of adverse childhood experiences has generated a very rich research agenda in many fields, ranging from the medical-epidemiologic literature to the psychological or socioeconomic sciences. One point that has clearly emerged from the ACE Study (CDC-Kaiser ACE Study), one of the most extended investigations exploring the impact of early life adverse circumstances, is that the effects of ACEs should be addressed from a whole life-course perspective. This early research describes the potential chain of effects in a framework called the “ACE Pyramid” (Fig. 1), which would allow scientists to explore the impact of ACE systematically, taking into account potential mediating effects of targeted policies.

Adverse childhood experiences can be classified into three main groups: (i) maltreatment or abuse (physical, sexual, and emotional), (ii) neglect (physical and emotional), and (iii) household challenges/family dysfunction.

The existing evidence documents that ACEs are rather common, but with important differences between groups, e.g., race, income, and education. The data from the Behavioral Risk Factor Surveillance System (BRFSS) conducted by the Centers for Disease Control and Prevention (CDC) indicate that more than 61% of the individuals from 23 states of the USA participating in the survey had experienced at least one type of ACE, while 24.64% reported three or more ACEs (Merrick et al. 2018). Similar figures are reported by Giano et al. (2020) who analyze data from BRFSS in 34 states (57.8% with at least one ACE and 21.5% with three ACEs or more). Using data from the National Survey of Children’s Health (NSCH), 2016, Sacks and Murphey (2018) focus on the household challenges/dysfunction circumstances. They report that about 45% of the children in the survey have been exposed to such events, with significant differences between states (Sacks and Murphey 2018).



**Fig. 1** ACE Pyramid. (Source: ACE Study, Centers for Disease Control and Prevention (CDC) and Kaiser Permanente)

By now, a consensus has been reached on the observation that the prevalence of ACEs, but also the cumulative number of adverse events, is highest among multi-racial and black children, followed by the Hispanic ones, while it is lowest for Asian children. As for the third category “household challenges,” the most common types of early life trauma are economic hardship (experienced by 22.5% of the children in the 2016 NSCH survey) and parental divorce or separation (various studies find percentages between 21.9% and 27%, Crouch et al. 2019, Merrick et al. 2018). Events such as child maltreatment, and emotional abuse, are the most frequent; based on BRFSS 2011–2014, Merrick et al. found prevalence rates as high as 34%.

While the previous findings refer mainly to exposure to early life abuse (physical/emotional/sexual) and household dysfunction (e.g., parental separation/divorce, household domestic violence, household mental illness, etc.), additional studies suggest that child neglect is one of the most common types of child maltreatment. In a metastudy, Stoltenberg et al. (2013) conclude that global prevalence rates are 16% for physical neglect and about 18% for emotional neglect.

While all the previous data refer to the USA, in Europe, data from the UK study on ACEs show that about 47% of the individuals have experienced at least one ACE, while 9% underwent four ACEs or more (Bellis et al. 2014a, b, c). Data are even more dramatic for other countries. A recent report by the World Health Organization,

on the prevalence of childhood trauma in the Russian Federation, documents surprisingly high rates of emotional neglect (57.9% of the respondents), emotional abuse (37.9%), physical abuse (14%), and sexual abuse (5.7%), in a sample of students enrolled in high education and colleges (Kachaeva et al. 2014). They also report percentages as high as 84% of individuals exposed to at least one ACE, and a percentage of 17.5% of individuals reporting four or more traumas.

Hence, adverse conditions and maltreatment in childhood are more widespread than one might think, and the associated immediate costs are relevant. Based on data from 2015, Peterson et al. (2018) estimated for the USA that the annual economic cost of child maltreatment alone was about \$428 billion. They assess that nonfatal child maltreatment per victim lifetime costs around \$830,928 while the fatal per victim costs to \$ 16.6 million. In a meta-analysis of 23 papers, Bellis et al. (2019) find that the annual health costs of adverse childhood experiences amount to about US\$ 581 billion in Europe and \$748 in the USA, representing 2.67% and 3.55% of the GDP, respectively. In an analysis of early life trauma in 28 European countries, Hughes et al. (2021) estimate that the annual health costs associated with an ACE range from 0.1 billion in Montenegro to \$129.4 billion in Germany. Such figures show that adverse childhood circumstances are associated with a significant social burden, pointing to the need to design and enact policies mitigating and preventing such events.

The largest share of scientific contributions investigating adverse childhood experiences is in the epidemiologic and psychological literature, but the association between early life negative circumstances and later life outcomes is of high relevance also from a socioeconomic perspective. Several studies estimate that such events imply high economic costs at the individual level and represent a heavy burden for society at large.

To design sound interventions aimed at mitigating the long-term negative effects of early life trauma, it is crucial to understand the mechanisms through which such negative events impact human life. From an economic perspective, ACEs can be associated with negative “investment” in children that translate into reduced human capital and in turn a lower economic position in society.

The most popular line of analysis that explains this mechanism, cast within a biological approach and in line with what shown in Fig. 1, states that undergoing adverse experiences in childhood would negatively affect the neurodevelopment of individuals with consequences on future health and later life outcomes (Dye 2018; Hays-Grudo and Morris 2020; Bellis et al. 2014a). However, this approach may potentially ignore some social transmission channels of the negative effects from early to later life (Trinidad 2021), so that the impact of these traumas may in fact be magnified by experiencing other difficulties in life.

## ACE and Health Outcomes

It is important to raise some methodological issues before presenting detailed evidence of the role played by adverse childhood experiences. Even though a very solid body of evidence is now showing the negative impact of ACEs on health and other outcomes, empirical work in this area is geared to the nature of the data used and future research may need to design ad hoc data collection projects. The empirical evidence on ACE is mostly based on rather small samples and case studies that focus on a target population, generally at the national or even the regional community level, so that the results cannot be scaled up to the population level and can hardly be used for cross-country comparisons (Brugiavini et al. 2022). When the data come from large surveys, ACEs were elicited through retrospectively recall questionnaires asked in adulthood, possibly subject to a recall bias (when individuals do not remember precisely when and how an event took place in the past) and “coloring” (when individuals answer to questions about their past, being influenced by their current socioeconomic and health status). These potential biases in survey data can be dealt with, especially if large panels of data (retrospective and ongoing) are available, but need to be addressed systematically (Havari and Mazzonna 2015).

Some studies are based on “cohort data” that follow a sample of individuals from birth to adult age drawn from the population at a specific year of birth: These may seem ideal as they are not suffering from recall biases. However, problems about the quality of the answers may emerge as, at very young ages, questions regarding the children are asked to their parents (Houtepen et al. 2020).

Finally, whatever the nature of the data, several studies aimed at exploring associations between ACEs and health outcomes, without considering potential confounders, which might affect health over the life course: behavioral (i.e., lifestyles) and/or biological (i.e., genetic predisposition) factors may contribute to the occurrence of specific diseases (Su et al. 2015), making it hard disentangling the contribution of ACEs from the rest. In light of these issues, caution is required in interpreting the data, but the association between ACEs and unhealthy lifestyle (smoking and heavy drinking) is by now well-established in the medical literature. The most compelling evidence comes from the USA, based on a sample of adult individuals of the Kaiser Permanente health maintenance organization in San Diego (see Anda et al. 1999; Felitti 2002; Dube et al. 2001; Dube et al. 2002). This program carries out biomedical, psychological, and social (biopsychosocial) evaluations every year on more than 50,000 adults. Directly and indirectly (through behavioral factors), ACEs also involve comorbid conditions, chronic diseases such as cancer and cardiovascular problems, and mental health problems (Anda et al. 1999, 2002; Chapman et al. 2004; Bellis et al. 2014a, b, c; Hughes et al. 2017; Chang et al. 2019; Nelson et al. 2020).

In particular, the empirical evidence suggests that adverse childhood experiences (ACEs) significantly contribute to smoking initiation in adolescence and smoking continuation in adulthood. The prevalence of current smoking is higher among adults who reported one or more ACEs and increases progressively as the number of ACEs increases (Ford et al. 2011). Similarly, findings coming from these studies

confirm a positive association between alcohol misuse and ACE: The risk of alcohol abuse and depression in adulthood increases as the number of reported ACEs increases, regardless of parental alcoholism. Moreover, children growing up in alcoholic households are more likely to experience ACE. A few studies outside the USA confirm this evidence: Bellis et al. (2014a) explore the link between unhealthy behaviors like smoking and heavy drinking and ACEs using a retrospective cross-sectional survey in a relatively deprived and ethnically diverse UK population. Bellis et al. (2014b) evaluate the association between ACEs and health-harming behaviors in early adulthood (e.g., substance use, physical inactivity, and attempted suicide) in eight eastern European countries while Chang et al. (2019) perform a cross-sectional study in a city on the Northeastern Hubei province, in China.

Besides smoking and drinking, obesity can be regarded as a serious health hazard caused mostly by poor eating habits and lack of physical activity. In line with the World Health Organization's definition of obesity, an individual is considered as "obese" whether they have a body mass index (BMI) of 30 or more. Existing evidence (e.g., Sturm 2002; Sturm and Wells 2001) suggests that, in turn, obesity is associated with high rates of chronic illness, and of poverty, and very high rates of smoking or drinking (Brugiavini et al. 2022). Moreover, most studies report a significant positive association between some types of childhood interpersonal violence (e.g., physical and sexual abuse and peer bullying) and obesity caused by eating disorders and physical inactivity, more pronounced for women compared to men (Midei and Matthews 2011; Danese and McEwen 2012). A very recent study by Schlauch et al. (2022) finds a strong significant association between the number of ACE and adult obesity controlling for genotype-environment interactions, hence placing a high statistical significance on behavioral and environmental drivers of obesity that can be traced back to ACE events.

A further strand of literature looks at the lasting effects of ACE on adult health.

Evidence suggests that experiencing adverse trauma in childhood (e.g., childhood physical, verbal, or sexual abuse, witnessing parental domestic violence, experiencing parental divorce, and living with someone who was depressed, abused drugs or alcohol, or who had been incarcerated) is associated with health outcomes such as self-rated health, functional limitations, diabetes, and cardiovascular diseases (Case et al. 2005; Monnat and Chandler 2015; Iniguez and Stankowski 2016; Hashemi et al. 2021). There are different mechanisms through which ACEs may affect the health-status of individuals over their lives. For instance, ACE may affect adult health through cumulative social and economic damage over time, and through the "biological embedding of adversities during sensitive developmental periods" (Monnat and Chandler 2015). An important question is if positive childhood experiences (PCEs) could mitigate the negative effects of ACE on health later in life. A recent study from New Zealand (Hashemi et al. 2021) considers both ACEs and PCEs, the latter referring to specific questions recalling positive experiences during childhood (i.e., "feeling loved" during childhood or "having childhood strengths recognised"). In line with other research, their findings indicate that respondents with higher exposure to ACEs have an increased probability of reporting adverse



outcomes related to self-reported health, chronic health conditions, and disability (physical, psychological, and cognitive). Interestingly, exposure to ACEs was detrimental to health even in the presence of PCEs, which do not seem to have a mitigating effect of ACEs on health.

Finally, a positive correlation emerges between early life adversities and the development of mental health problems later in life. Exposure to ACEs is associated with an increased risk of adults mental and behavioral disorders, such as depression, emotional well-being, and suicide (Dube et al. 2001; Chapman et al. 2004; Anda et al. 1999; Hughes et al. 2017; Merrick et al. 2017, Buia et al. 2019; Nelson et al. 2020; Novais et al. 2021). Stress caused by exposure to specific ACE can manifest into several different behavioral, neurological, and psychiatric disorders. For example, childhood emotional abuse may increase the risk of developing a lifetime depressive disorder (Chapman et al. 2004). Dube et al. (2001) show that individuals exposed to ACEs have an increased risk of suicide throughout their lives. In particular, early adversities are related to specific mental health outcomes (such as low self-esteem, emotional dysregulation, or inadequate attachment) which favor the occurrence of depressed mood and suicide attempts. The psychological consequences of ACEs are also explored by Nelson et al. (2020). They show that early adversity can lead to the development of mental problems early in life (e.g., disruptive behavior) that later in life manifests in more severe forms, such as antisocial personality.

All these factors imply significant economic and social costs and reduce the flow and accumulation of human capital, especially in terms of educational attainments and work performance (Abegunde et al. 2007; Elwood et al. 2013; Brugiavini et al. 2022).

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## **ACEs, Education, and Labor Market Outcomes**

An emerging strand of literature looks at the effects of ACEs on socioeconomic outcomes such as education, earnings, and employment, showing that adult individuals reporting experiences of child physical abuse or child neglect have lower levels of education, lower earnings, and fewer assets compared to those who do not report early adverse circumstances (Currie and Widom 2010). This calls for a better understanding of what can be the mechanisms through which ACEs affect these outcomes, taking into account the mechanisms that propagate adverse experiences in early life on late life choices and actions. While some negative events are above the society/individuals' possibility of intervention (e.g., death of a parent), for some others there may be room for early interventions that mitigate the negative impact of ACE. It should be stressed that early negative experiences are often coupled with a preexisting deprived family environment (Zielinski 2009). Hence, if trauma in childhood determines lower education attainment, worse employment opportunities (more frequent and long-lasting unemployment), and lower income, it is crucial to revert this pattern, as ACEs from one generation will generate worse conditions for future generations in a perverse circle of events.



The earliest studies on the association between ACEs and socio-economic outcomes date back to the 1980s–1990s. Since they were restricted to very small and selected samples, they did not allow for a generalization of their results.

Limitations in educational attainments are important potential consequences of exposure to early life adversities. The biological perspective of the transmission mechanism of the effects from childhood to later life by means of the disruptions in the neurodevelopment of the children suggests that educational outputs should be regarded both as an outcome and as a mediator for other potential lifetime consequences.

Several recent studies report that ACEs are negatively related to educational achievements. Boden et al. (2007) find that exposure to physical and sexual abuse are associated with lower probabilities of getting a High School and a University degree and a smaller likelihood of attending University. Using data from a prospective longitudinal study in which children and adolescents were interviewed annually from 1987 to 1999, Landsford et al. (2002) show that individuals experiencing early life maltreatment display lower grades and standardized test scores and higher levels of absenteeism or school suspension.

In a recent Report, the United Nations Educational, Scientific and Cultural Organization (UNESCO 2017) pointed out increasing trends of school violence and bullying. The report documents that students exposed to bullying or violence from colleagues or teachers display larger rates of absenteeism, lower educational performance, and higher dropout probabilities.

In a global review and meta-analysis of the relationship between exposure to violence in early life and educational outcomes, based on several papers from 21 countries, Fry et al. (2017) explore school graduation/dropout, academic achievement/performance, and school absence. These outcomes are related to explanatory variables such as exposure to child neglect or violence inside the household (physical, sexual, and emotional violence, witnessing domestic violence) or outside the household (bullying, adolescent relationship, and community violence). The results indicate a positive association between all the various forms of violence and both school dropouts as well as grade repetition or the need for remedial classes. The interesting result is that the magnitude of the estimated effect differs by type of adversity. Exposure to emotional violence in the family or to a broader category called “other” (including community violence, also related to gangs and traffickers) is associated with an increased risk of dropping out of school twice as large. School absenteeism displays differences between genders: Males who were exposed to bullying, and girls who were victims of sexual violence are about three times more likely to experience absenteeism.

In the same direction points also a recent analysis by Houtepen et al. (2020) that explores the association between the types of ACEs/the cumulative number of trauma experienced by an individual in early life and academic performance. The study is based on data from the Avon Longitudinal Study of Parents and Children (ALSPAC) conducted in the UK, merged with information on the score in the General Certificate of Secondary Education (GCSE) examination from the National Pupil Database. The survey was run on a prospective cohort of children born in

England between 1991 and 1992 and who were followed in time up to age 22, being interviewed at several points in time. One advantage of this study is that information on exposure to ACEs was collected both prospectively and retrospectively (at age 22). In addition, information on several crucial variables related to mothers' situation during pregnancy was also available and used to adjust for confounders. The results showed that reporting childhood trauma was associated with lower school performance. Moreover, the correlation was stronger as the cumulative number of ACEs was increasing and the effects were significant even after adjusting for confounding factors related to the socioeconomic status of the family. When addressing the relationship with every single form of trauma, strong and persistent negative correlations were found for emotional neglect, bullying, and parental separation.

Most of the studies analyzing the ACEs' relationship with educational outcomes also enquire on the associations of early life trauma with other socioeconomic indicators such as employment and/or income.

Zielinski (2009) explores the relationship between exposure to child maltreatment and three socioeconomic outcomes: income, employment status, and health insurance coverage. He makes use of data collected through the National Comorbidity Survey between 1990 and 1992, for a sample of individuals between the ages of 18 and 54. The author constructs and analyses two measures for each of the outcomes considered: being in a particular income quartile or being below the federal poverty level, for income, being unemployed and living in a household that experienced an important income loss due to some job-loss in the previous 12 months, for employment, and being enrolled in some public program supporting medical care and having some form of health insurance coverage, for the last outcome. Separate logit regressions were performed to assess (i) the impact of exposure to some form of child maltreatment, on the one hand, and (ii) the effects of every single subtype of child maltreatment, on the other hand. The results indicate that individuals that have experienced ACEs were about twice more likely to live in families below the Federal poverty level, to report unemployment, and were associated with significantly higher probabilities of lacking health insurance coverage. However, it is worth observing that there is some heterogeneity in the impact of the single forms of early life trauma. While all the subtypes were associated with larger probabilities of living in families falling below the poverty level, the effects were stronger and the magnitudes larger for those who were victims of sexual abuse. The analysis revealed significantly higher likelihoods of unemployment only for those having been exposed to physical abuse while reporting sexual abuse, and child neglect was associated with larger probabilities of belonging to families in the lowest income quartile. Finally, exposure to more than one type of maltreatment increased the likelihood of experiencing unemployment, living in a family below the poverty income level and relying on public programs for covering health expenses.

Metzler et al. (2017) explore the association between the number of adverse circumstances experienced during childhood and educational attainment on the one hand, and employment and income in adulthood on the other hand, using data for ten states plus the District of Columbia from the BRFSS, 2010. Persons having higher

ACE scores (having experienced more trauma during early life) were significantly more likely not to complete a high school degree, to end up in unemployment or to live in a household reporting poverty. The likelihood of such outcomes increased as the number of ACEs increased.

Such results are also supported by findings in other papers/countries. Using data from two retrospective cross-sectional surveys conducted in England and Wales, Hardcastle et al. (2018) enquire on the association between the number of ACEs one was exposed to in early life, educational attainment, and the probability to end up in unemployment or not employment. With respect to the individuals not having experienced any trauma, those that underwent four or more ACEs displayed twofold probabilities of remaining with no school qualification and were 2.5 times more likely to be unemployed at the time of the interview.

Similar evidence is reported also by Covey, Menard, and Franzese (2013), and Macmillan and Hagan (2004): Exposure to family and/or neighborhoods violence during adolescence is associated with poorer educational attainments (higher school dropout rates) and lower adult employment and income.

However, it should be observed that most of the studies are based on data that assess the respondents' situation at one moment in time (and a particular age). This is particularly relevant to labor market outcomes, as the results are exposed to transitory period effects. Only a limited number of papers specifically look at the relationship between ACEs and the accumulated periods or episodes of unemployment across the working career. Egan et al. (2015), for instance, use two different National surveys (i.e., the Longitudinal Study of Young People in England (LSYPE) and the National Child Development Study (NCDS)) to analyze whether childhood psychological distress places people at higher risk of subsequent unemployment in the early stages of their working life. Their findings suggest that the individuals who report experiencing high distress accumulate more months of unemployment for those who do not report psychological distress.

Hansen et al. (2021) study the impact of exposure to ACEs on the trajectories from education to the labor market for a sample of Danish individuals born in 1983, who are followed along time between ages 16 and 32. In a first step, they distinguish among seven state spaces that may be linked in the transition from compulsory school to the labor market in this age band (compulsory school, upper secondary school, vocational training, higher education, other education, employment, and out of the labor market). Based on the state's sequences, they identify several clusters corresponding to different trajectories from compulsory school to working life and then assess the potential effect of having experienced one or more adverse early life events on the probability to end up in one of these clusters. They find that having undergone a higher number of trauma in early life is associated with a higher probability to follow a trajectory to the labor market without higher education and characterized by longer periods of sick leave or more frequent and longer unemployment periods, even when controlling for the socioeconomic status of the origin family. When taking into account separately every single type of adversities, parent separation, abuse, and having witnessed a violent event proved to have stronger correlations with more problematic transition trajectories.

In a rather different setup, Naicker et al. (2022) assess the relationship between having experienced several types of trauma in early life and the risk of not completing secondary education, on the one hand, and the likelihood of unemployment, on the other hand. They use data collected in the Birth to Thirty surveys, conducted on a cohort of children born in 1990 and followed along life up to the age of 30, in Johannesburg (South Africa). This is one of the few studies in this area performed in an African developing country. Information on exposure to ACE has collected both prospective (at various ages) and retrospective (at age 22). The authors find that exposure to physical, sexual, and emotional abuse is associated with a higher probability of not completing secondary education, while children who experienced household death, physical abuse, exposure to violence, and household substance abuse were more likely to undergo unemployment. Significant effects were found also when evaluating the effects of the cumulative number of ACEs.

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## Summary

The negative effect of exposure to adverse events during childhood and adolescence on a number of lifelong human capital indicators have been documented. Early adversities are increasingly recognized as important contributors to deleterious health and economic outcomes later in life.

Although detailed estimates of the effects of adverse childhood experiences (ACEs) on several outcomes are mostly available for the USA and a few European countries, a consensus has been reached among scientists of all fields that ACEs have a significant negative impact on individuals' development and human capital formation and generate huge social and economic costs.

A few facts are clear: (i) ACEs are rather common among individuals; and (ii) they have a higher prevalence among disadvantaged categories. This latter result raises concern, because traumas in early childhood may contribute to increasing inequalities for current and for future generations, due to the perverse effect on the economic resources of (future) parents.

A variety of traumas can take place at early ages: abuse (emotional, physical, or sexual), neglect (either physical or emotional), violence, substance use, mental health, parents' separation and divorce, parents' incarceration, etc. A very rich literature has been summarized showing that all these adverse experiences have negative effects on health conditions, on behavioral risks (smoking and drinking), on human capital formation (including education), and ultimately on labor market opportunities and well-being.

Indeed, based on the results of the ACE study (1995–1997) and the BRFSS (The Behavioral Risk Factor Surveillance System (BRFSS) includes an extended module on ACEs from 2009 onward.), the Center for Disease Control and Prevention has been supporting, since 2020, institutions from six USA States that enacted prevention strategies with respect to early life trauma. Hence, even in the absence of a comprehensive international study, some policies can be enacted immediately, based on what has been shown: Governments should support the development of

children's abilities from an early age, particularly in disadvantaged families, and they should inform and increase the understanding of individuals about ACEs and implement prevention strategies against mal-treatment of different sorts in childhood.

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## Cross-References

- ▶ Causal Analysis of Family Policies (Program and Policy Evaluations)
- ▶ Causal Analysis of Social Policies (Program and Policy Evaluations)
- ▶ Causal Evaluation of Educational Policies (Program and Policy Evaluations)
- ▶ Child Abuse and Neglect (Family Economics)
- ▶ Child Custody Laws and Household Outcomes (Household Economics)
- ▶ Costs of Victimization (Risky Behaviors)
- ▶ Covid-19 and Early Childhood (Covid-19)
- ▶ Early Life Health Shocks and the Labor Markets (Development and Labor)
- ▶ Economic Shocks and Children's Education (Household Economics)
- ▶ Economics of Obesity (Risky Behaviors)
- ▶ Economics of Suicide (Risky Behaviors)
- ▶ Family Left Behind (Family Economics)
- ▶ Human Capabilities in Economics: Theory and Applications in Health and Labor (Health)
- ▶ Inequality of Opportunity, Economic Development, and Poverty (Development and Labor)
- ▶ Intergenerational Health Mobility (Health)
- ▶ Intimate Partner Violence (Household Economics)
- ▶ Light, Moderate, and Heavy Drinking (Risky Behaviors)
- ▶ Parenting Behavior and Outcomes for Children (Household Economics)
- ▶ Rank Effects in Education: What Do We Know So Far? (Education: Schooling: Human Capital)
- ▶ Religion and Family (Religion)
- ▶ Religion and Risky Habits (Risky Behaviors)
- ▶ Religion and the Intergenerational Transmission of Human Capital (Religion)
- ▶ Second Generational Impacts: The Legacy of Prenatal Shocks on Human Capital (Education: Schooling: Human Capital)
- ▶ Socioeconomic Conditions in Childhood and Mental Health Later in Life (Welfare, Well-Being, and Happiness)
- ▶ Take-Up of Social Benefits (Program and Policy Evaluations)
- ▶ The Child Quantity-Quality Trade-Off (Family Economics)
- ▶ The Economics of Nicotine Consumption (Risky Behaviors)
- ▶ The Insurance Role of the Family (Family Economics)
- ▶ Understanding Inequality Within Households (Inequality and Poverty)
- ▶ Up in Smoke? The Market for Cannabis (Risky Behaviors)
- ▶ Violence and Risky Behaviors in Professional Sports (Risky Behaviors)

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