

## Annex 1: Evidence of the effects of child work and other adverse childhood experiences, for different dimensions of adversity

Known effect from research on child work	Known effects from other areas of research
<b>Abuse / threat</b>	
<b>Mental health</b>	
<p>Trafficked children involved in forced labour (street begging, fishing, forced sex work, factory work) are exposed to threat, excessive hours, witnessing violence against peers, sexual and physical violence, poor living conditions, restricted freedom, all strongly correlated to injuries and mental disorders (PTSD, anxiety, depression, suicidal ideations, externalizing disorders) (Kiss, Yun, Pocock, &amp; Zimmerman, 2015).</p> <p>Child domestic workers are confronted to physical, verbal and sexual violence associated with severe physical injuries and poor psychosocial wellbeing (Thi, Zimmerman, Pocock, Chan, &amp; Ranganathan, 2021)</p>	<p>Economical harshness, perceived entrapment and interpersonal adversities during middle childhood and adolescence contribute to the onset and maintenance of depression (Ho &amp; King, 2021). Exposure to threat during early childhood provokes accelerated biological ageing and pubertal timing, which are linked to depression in childhood and adolescence (Sumner, Colich, Uddin, Armstrong, &amp; McLaughlin, 2019).</p> <p>Children exposed to abuse and/or domestic violence are more likely to suffer from behavioural disorders (internalization and externalization) (Moylan, et al., 2009).</p>
<b>Learning / cognitive development</b>	
<p>Exposure to lead of working children decreases IQ by 4.5 to 17.5 points, which in turn decreases lifetime earnings by 10-40% (Ide, 2005).</p> <p>Children engaged in work, even occasionally, have a lower language score and a lower math score than children who do not work (Gunnarsson, 2006; Emerson, 2017; Kassouf, 2001).</p>	<p>Physical maltreatment alters the structure of the brain, with negative impacts on executive functions and educational achievement (Teicher, Samson, Anderson, &amp; Ohashi, 2016).</p> <p>Exposure to threat during childhood disrupts the development of brain structures related to memory and emotion processing, eliciting cognitive and behavioural impairments in adulthood (McLaughlin, Sheridan, &amp; Lambert, 2014).</p> <p>Exposure to sexual abuse during childhood leads to lower language skills, school attainment and cognitive capacities (Trickett, Noll, &amp; Putnam, 2011).</p>
<b>Physical health</b>	
<p>Children carrying heavy loads are 1.9 time more likely to have anaemia (Doocy, 2007).</p> <p>Children exposed to hazardous work are more likely to report physical health issues than non-working children (Posso, 2018).</p>	<p>Exposure to pesticides during childhood increase the risk of cancers (INSERM, 2021).</p> <p>Exposure to sexual abuse during childhood leads to physical health issues, like the dysregulation of the stress system, obesity, accelerated pubertal development, sleep problems and higher utilization of healthcare services (Trickett, Noll, &amp; Putnam, 2011).</p> <p>Exposure to violence and related stress load (witnessing maternal domestic violence, bullying and physical maltreatment by an adult) between 5 and 10 years accelerate biological aging (shorter telomer length), and increase the risk of morbidity, obesity,</p>

	psychiatric disorders and psychosocial distress (Shalev, et al., 2012).
<b>Neglect / deprivation</b>	
<b>Mental health</b>	
<p>Food deprivation and absence of a supportive adult contribute to <b>psychosocial vulnerability</b> of child domestic workers in India and Philippines (Hesketh, Gamlin, Ong, &amp; Camacho, 2012).</p> <p>The competition between working hours and school time, and being deprived from access to school is negatively correlated to the <b>psychological wellbeing</b> of working children (ICI, 2022).</p>	<p>Children neglected by their parents are more likely to suffer more severe <b>internalizing behavioural disorders</b> than abused children (Hildyard &amp; Wolfe, 2002). These deficits are similar to those observed in severe poverty and institutionalization (Spratt, et al., 2012).</p> <p>Intergenerational transmission of adverse parenting (parental rejection) is linked with children's <b>behavioural disorders</b> across cultural contexts (Rothenberg, et al., 2022).</p> <p>Self-reported parental neglect during childhood was significantly associated with <b>psychopathological outcomes</b> in early adulthood in three groups of students from three different countries (Netherlands, Kenya, Zambia) (Mbagaya, Oburu, &amp; Bakermans-Kranenburg, 2013).</p>
<b>Learning / cognitive development / economic life</b>	
<p>Excessive working burden limits girls' school time and socialization with peers, which may compromise their development (Levison, DeGraff, &amp; Dungumaro, 2018).</p> <p>Child work has a <b>negative impact on cognitive development</b> by crowding out school time (Neal, Krutikova, &amp; Keane, 2020)</p> <p>Girls' excessive involvement in chores and other activities <b>reduce time needed for development-promotive activities</b>, which <b>harms their social and mental development</b> (Abdourahman, 2017).</p>	<p>Deprivation is associated with <b>worse performance on cognitive control task</b> (McLaughlin, Sheridan, &amp; Lambert, 2014).</p> <p>Emotional neglect predicts <b>poor executive functions</b> (Mueller, et al., 2010; Kim-Spoon, et al., 2021).</p> <p>Children neglected by their parents are more likely to suffer more severe <b>cognitive and academic deficit</b> than abused children (Hildyard &amp; Wolfe, 2002). These deficits are similar to those observed in severe poverty and institutionalization (Spratt, et al., 2012). Neglected children have <b>lower IQ</b> and <b>academic achievement</b> in adulthood compared to non-neglected children. They are also more likely to have lower earnings and a lower-skilled job (Currie &amp; Widom, 2010).</p>
<b>Duration/intensity</b>	
<b>Learning / cognitive development (and health)</b>	
<p>Each hour worked per day by the child reduces her/his <b>verbal ability / language skills</b> (Gebremedhin, 2015).</p> <p>The number of hours the child works during the week decrease <b>school attendance</b> in the long term (Beegle, Dehejia, &amp; Gatti, 2004), but also <b>years of schooling</b> and the <b>probability of completing primary school</b> (Beegle K. , Dehejia, Gatti, &amp; Krutikova, 2008).</p>	<p>Chronic exposure to common, mild to moderate and ongoing adverse settings (hostility, lack of warmth among family members, food/financial insecurity, poor school quality/community) impact the child and adult health status, cognitive skills and vulnerability to other adverse events (Odgers &amp; Jaffee, 2013).</p> <p>The time spent by children in the orphanage has a proportional negative impact on their overall functioning (mental and physical health, executive</p>

What makes child labour harmful and what it means for the cocoa sector?

<p>Hours worked linearly <b>reduce school attendance, performance</b> and time dedicated to study, from the first hour worked (Ray, 2005).</p> <p>Children working 1 standard deviation above the average hours worked have average scores 16% lower on <b>mathematics</b> and 11% lower on <b>language</b> examinations (Gunnarsson, 2006).</p> <p>The amount of time spent by children in income generating work or chores have a detrimental effect on <b>cognitive development</b> (Dinku &amp; Fielding, 2020).</p>	<p>functioning, academic performance) at age 12 (Humphreys, et al., 2018).</p>
<p><b>Timing</b></p>	
<p><b>Mental health</b></p>	
<p>Children who started working at or <b>before the age of 14</b> have a higher probability of developing <b>depressive symptoms</b> compared to those who started at subsequent ages (Aransiola TJ, 2018).</p>	<p>Threat or isolation <b>during adolescence</b> disrupt the development of the prefrontal cortex, which has negative impact on <b>mental health</b> (Larsen &amp; Luna, 2018).</p>
<p><b>Learning / cognitive development / economic life</b></p>	
<p>Child labour has a negative effect on <b>learning achievement</b> in both the younger and older groups (<b>8–12 years</b>, compared to 13 years and over), but the effect is higher on younger children (Lee &amp; Kim, 2021).</p> <p>The age at which children start working strongly reduce the likelihood that the child <b>transitions from primary to secondary school</b> (the sooner before the age of 7, the lower the likelihood) (Mussa, Mirzabaev, Admassie, Nshakira-Rukundo, &amp; von Braun, 2019).</p> <p>Age plays a crucial role in the determination of the sign of the child labour effect on later <b>vulnerable employment</b>. On average, for children <b>younger than 10</b> child labour has only negative effects. The negative effects of domestic chores are quite large: the probability of vulnerable employment increases considerably for girls under 13, up to 20 percentage points for 10-year-olds. Child labour on the household farm has even more adverse effects. (Burrone &amp; Giannelli, 2020).</p>	<p>Access to low quality school <b>during middle childhood</b> compromises children’s <b>learning and earning potential</b> (Black, et al., 2021).</p> <p>The <b>adolescents’</b> brain is particularly sensitive to stress, which may trigger several <b>mental disorders</b> (Lupien, McEwen, Gunnar, &amp; Heim, 2009).</p> <p>The capacity to form long-term memory emerge <b>during middle childhood</b>, and adverse experiences prematurely accelerate the stabilization of the connexions between the brain’s emotion processing and executive functions areas, which makes attention more sensitive to negative stimuli. These changes underpin the heightened propensity of children exposed to adversity in this period to see the environment as dangerous and unpredictable and to develop <b>depression</b> (Ho &amp; King, 2021).</p> <p>Threat or isolation <b>during adolescence</b> disrupt the development of the prefrontal cortex, which has negative impact on <b>cognitive control</b> (impulse control, decision-making) (Larsen &amp; Luna, 2018).</p> <p>Exposure to adversity during middle childhood alters several key structures of the brain involved in <b>emotion recognition, language/reading and memory</b>, while adverse experiences during peri-pubertal period may alter structures involved in <b>emotion processing and executive functions</b> (Teicher, Samson, Anderson, &amp; Ohashi, 2016).</p> <p>Strengthening non-cognitive skills (e.g., self-efficacy, motivation) during middle childhood or adolescence have an impact on school achievement, earnings and</p>

## What makes child labour harmful and what it means for the cocoa sector?

	mental health in the long run (Heckman & Kautz, 2013).
<b>Accumulation</b>	
<b>Mental health</b>	
<p>Child domestic workers have lower <b>psychosocial scores</b> than children attending school during to the accumulation of adverse conditions (non-attendance at school, long working hours, physical punishment, social isolation) (Hesketh, Gamlin, Ong, &amp; Camacho, 2012).</p> <p>The child's <b>psychosocial wellbeing</b> of child labourers is negatively and independently correlated to several types of adversity (family conflict, working alone, hazardous work, violence in the workplace) (Fantón d'Andon C, 2022).</p>	<p>The number of adverse experiences during childhood increase the likelihood of <b>mental health</b> outcomes (depression, suicidal ideations, ADHD) (Nelson, Bhutta, Harris, Danese, &amp; Samara, 2020).</p> <p>The likelihood of negative outcomes in adulthood (<b>psychological distress</b>, incomplete schooling, unemployment, criminality) increased with the number of adverse experiences during childhood in a prospective longitudinal study in South Africa (Naicker, et al., 2022).</p>
<b>Miscellaneous</b>	
	<p>The number of adverse experiences during childhood increase the likelihood of <b>developmental delay</b>, negative <b>physical</b> (asthma, unexplained somatic symptoms – nausea, dizziness, headaches – poor dental health, infections) and <b>mental health</b> outcomes (depression, suicidal ideations, ADHD), <b>learning and/or behavioural</b> (aggression, drug / alcohol consumption) issues and <b>poor academic outcomes</b> (school absenteeism, reduced graduation rate from high school, school year repetition) (Nelson, Bhutta, Harris, Danese, &amp; Samara, 2020).</p> <p>The likelihood of poor child <b>health outcomes</b> (asthma, allergies, headaches, digestive disorders) and <b>school absenteeism</b> increases with the number of adverse experiences (Bellis, et al., 2018).</p>
<b>Child characteristics and background</b>	
<b>Physical health</b>	
<p>The correlation between child labour and incidence of adult <b>chronic diseases and functional limitations</b> is <b>mediated by</b> the adverse effect of child labour on years of schooling and resulting occupational choices (Lee C. a., 2010)</p> <p>Early admission into the labour market, regardless of the type of work, adversely affects <b>health outcomes in adulthood</b>, both directly and <b>indirectly</b> (affecting educational attainment through the loss of school years) (Nishijima, de Souza, &amp; Sarti, 2015)</p>	<p>Child adversity may lead to <b>cardiovascular diseases via</b> health behaviour, physiological mechanisms (inflammation, overdriven stress system) and mental health issues (Suglia, et al., 2018)</p> <p>School environment during childhood can hinder non-cognitive skills, with negative outcomes in <b>health and life satisfaction</b> at the beginning of adulthood (Baker, Gruber, &amp; Milligan, 2015).</p>
<b>Adult earnings</b>	
<p>Exposure to lead of working children decreases IQ by 4.5 to 17.5 points, which in turn decreases <b>lifetime earnings</b> by 10-40% (Ide, 2005).</p>	<p>Childhood psychological problems negatively impact adult <b>family income</b> (28% lower net family income by age 50) (Goodman, Joyce, &amp; Smith, 2011).</p>