



The transgenerational cycle of adverse childhood experiences: transmission and familial factors for intervention – first results of an 18-year German longitudinal study

Max Supke  ^{a,b}

^aInstitute of Psychology, Department of Clinical Psychology, Psychotherapy and Diagnostics, Technische Universität Braunschweig, Braunschweig, Germany; ^bLeibniz Institute for Resilience Research (LIR), Mainz, Germany

ABSTRACT

Background: Adverse childhood experiences (ACEs) often exhibit an intergenerational cycle within families, although the transgenerational effects tend to be small to moderate. Many families seem to be able to break this cycle.

Objective: This study aimed to examine how many emerging adults remain in the same ACE group as their parents, show improvement, or experience deterioration, and to identify factors associated with these transgenerational changes.

Method: Data from 316 families participating in the 18-year German longitudinal study 'Future Family' were analyzed. The dataset included information from mothers (average age: 54 years), fathers (57 years), and their emerging adults (22 years). Descriptive statistics, Pearson correlation coefficients, and a multinomial regression model were computed.

Results: Small correlations were found between the total ACE scores of parents and emerging adults. Approximately half of the emerging adults belonged to the same ACE group as their parents, while the other half experienced a shift in group membership across generations. Lower levels of dysfunctional maternal parenting behaviour in early childhood were associated with improvements in emerging adults' ACE group status, while a higher maternal socioeconomic status was linked to a reduced likelihood of deterioration. Many emerging adults of parents in the high-risk group (reporting ≥ 4 ACEs) reported fewer ACEs themselves, indicating that high-risk families are able to break the cycle of adversity.

Conclusions: The main findings support existing prevention efforts, particularly the strengthening of parenting skills and the enhancement of families' economic resources. Future research should examine the intergenerational transmission of ACEs with a sex-sensitive approach and place greater emphasis on the role of fathers.

El ciclo transgeneracional de las experiencias adversas en la infancia: transmisión y factores familiares para la intervención – primeros resultados de un estudio longitudinal alemán de 18 años

Antecedentes: Las experiencias adversas en la infancia (ACEs, por sus siglas en inglés) suelen presentar un ciclo intergeneracional dentro de las familias, aunque los efectos transgeneracionales tienden a ser de pequeños a moderados. Muchas familias parecen ser capaces de romper este ciclo.

Objetivo: Este estudio tuvo como objetivo examinar cuántos adultos emergentes permanecen en el mismo grupo de ACEs que sus padres, muestran mejoría o experimentan deterioro, e identificar los factores asociados con estos cambios transgeneracionales.

Método: Se analizaron datos de 316 familias que participaron en el estudio longitudinal alemán de 18 años 'Familia Futura'. El conjunto de datos incluyó información de madres (edad promedio: 54 años), padres (57 años) y sus adultos emergentes (22 años). Se calcularon estadísticas descriptivas, coeficientes de correlación de Pearson y un modelo de regresión multinomial.

Resultados: Se encontraron correlaciones bajas entre las puntuaciones totales de ACEs de los padres y los adultos emergentes. Aproximadamente la mitad de los adultos emergentes pertenecían al mismo grupo de ACEs que sus padres, mientras que la otra mitad experimentó un cambio en la pertenencia al grupo a lo largo de las generaciones. Los niveles más bajos de conducta parental disfuncional de la madre en la primera infancia se asociaron con mejoras en la situación de los adultos emergentes en el grupo de ACEs, mientras que un nivel socioeconómico materno más alto se relacionó con una menor probabilidad de deterioro. Muchos adultos emergentes con padres en el grupo de alto riesgo (reportando ≥ 4 ACEs) reportaron menos ACEs, lo cual indica que las familias de alto riesgo son capaces de romper el ciclo de adversidad.

ARTICLE HISTORY

Received 1 July 2025
Revised 13 September 2025
Accepted 23 September 2025

KEYWORDS



Adverse childhood experiences (ACE); prevention; longitudinal; intergenerational transmission; risk factors

PALABRAS CLAVE

Experiencias adversas en la infancia (ACEs); prevención; estudio longitudinal; transmisión intergeneracional; factores de riesgo

HIGHLIGHTS

- Longitudinal data spanning 18 years from 316 families in the German Future Family study were analyzed to examine intergenerational patterns and predictors of changes in Adverse childhood experiences (ACE) group membership.
- About half of the emerging adults changed their ACE group status, suggesting that the cycle of adversity can be broken.
- Lower levels of dysfunctional maternal parenting behaviour in early childhood were associated with improvements in emerging adults' ACE group status, while a higher maternal socioeconomic status was linked to a reduced likelihood of deterioration.

CONTACT Max Supke  m.supke@tu-bs.de  Institute of Psychology, Department of Clinical Psychology, Psychotherapy and Diagnostics, Technische Universität Braunschweig, Humboldtstr. 33, 38106 Braunschweig, Germany

© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

Conclusiones: Los principales hallazgos respaldan las iniciativas de prevención existentes, en particular el fortalecimiento de las habilidades parentales y la mejora de los recursos económicos familiares. Las investigaciones futuras deberían examinar la transmisión intergeneracional de ACEs con un enfoque sensible al género y priorizar el rol de los padres.

The CDC-Kaiser Permanent Adverse Childhood Experiences (ACE) Study (Centers for Disease Control and Prevention, 2016), originally conducted by Felitti et al. (1998), was a groundbreaking investigation into ACEs and child maltreatment in the United States. Surveying nearly 17,000 Americans, the study examined ten categories of ACEs, including sexual abuse, neglect, domestic violence, and parental divorce. The findings highlighted the widespread nature of these experiences and their long-term associations with a wide range of mental and physical health outcomes. Subsequent research has consistently confirmed that ACEs are prevalent not only in the United States but globally as well (e.g. Carlson et al., 2020).

1.1. Transgenerational effects of adverse childhood experiences

Since the original study, the associations between ACEs and poor health outcomes across the life course have been extensively researched and documented (e.g. Hughes et al., 2017; Kuzminskaite et al., 2021; Nelson et al., 2017; Petruccioli et al., 2019). However, the impact of ACEs extends beyond physical and mental health. ACEs are also associated with an increased likelihood of initial and repeated involvement with the juvenile justice system (Folk et al., 2021), lower academic achievement (Qu et al., 2024), and even premature mortality (Yu et al., 2022).

ACEs not only affect the individual's own health and development, but these experiences can also impact the well-being of subsequent generations within a family (Cooke et al., 2021; Yang et al., 2023). Research has shown that ACEs already exert a significant impact during pregnancy (Moog et al., 2023; Racine et al., 2018; Tadjine & Swords, 2025), with effects extending into the postnatal mother-child relationship and shaping parenting behaviour. They are associated with an increased likelihood of harsh parenting strategies, which in turn are linked to the development of mental health difficulties extending into adolescence (Bravo et al., 2023). The impact of ACEs on dysfunctional parenting practices – such as physical or emotional abuse and the use of physical punishment – is further aggravated by maternal mental health problems, intimate partner violence, and poor parent-child relationship quality (Lotto et al., 2023). Many of the mechanisms

underlying these transgenerational effects of ACEs remain insufficiently researched or are not yet fully understood.

1.2. Transgenerational transmission of adverse childhood experiences

A cyclical pattern of ACE transmission may emerge within families across multiple generations (e.g. Hughes et al., 2017). For example, children who have experienced multiple ACEs during their childhood are at increased risk of engaging in problematic alcohol or drug use during adolescence and young adulthood, often as a way of coping with the emotional consequences of these experiences (such as attempting to reduce symptoms of depression or anxiety; Felitti et al., 1998; Hughes et al., 2017; Strine et al., 2012). Substance use can, in turn, lower behavioural inhibitions and increase the risk of violent behaviour against others. If an individual with such a background (e.g. abusing alcohol and drugs), later becomes a parent they may be more likely to employ violent or harsh parenting strategies, particularly if they have not had the opportunity to learn alternative, non-violent approaches to caregiving (e.g. Burke et al., 2023). Consequently, new ACEs may also arise in the next generation (e.g. witnessing domestic violence or experiencing physical abuse).

1.3. Risk factors for adverse childhood experiences in the next generation

Studies have shown that the transgenerational transmission of child maltreatment and ACEs can persist across multiple generations, although effect sizes for this transmission tend to be small to moderate (e.g. Bunting et al., 2022; Madigan et al., 2019). This suggests that while many families may experience a cycle of ACEs across multiple generations, others are able to break this cycle and prevent the transmission of these adversities. Several risk and protective factors have been identified that are associated with the occurrence of ACEs in the next generation. Children are at heightened risk of maltreatment if their mothers experienced maltreatment during their own childhood (Armfield et al., 2021; Madigan et al., 2019), or if parental psychopathology or intimate partner violence is present (Langevin et al., 2021; van IJzendoorn et al.,

2020). Additionally, poor child health, a lack of perceived family support, fewer children in the household, older child age, the household being in receipt of benefits, and younger parental age have been significantly associated with higher exposure to ACEs in children (Bunting et al., 2022). The presence of safe, stable, and nurturing relationships, along with greater financial and economic resources, appear to be important protective factors in the intergenerational transmission of maltreatment (Langevin et al., 2021; Madigan et al., 2019; Schofield et al., 2013; van IJzendoorn et al., 2020).

The presented findings highlight the critical importance of early prevention efforts. To develop effective prevention strategies, it is essential to elucidate the intergenerational mechanisms underlying the transmission of ACEs to mitigate long-term negative outcomes. However, longitudinal data that simultaneously include both parental and child perspectives remain scarce (Narayan et al., 2021). Notably, paternal influences have also been largely overlooked, as the majority of existing research has focused predominantly on maternal risk and protective factors (Grafft et al., 2024; Zhang et al., 2023). It is also crucial to consider sex-specific differences in both the experience and consequences of ACEs. Women are more likely than men to report higher rates of ACEs and may experience more complex and diverse patterns of adversity (e.g. Haahr-Pedersen et al., 2020; Petrucci et al., 2019). Moreover, sex-specific differences have been observed in the behavioural outcomes associated with ACEs, such as the likelihood of engaging in risk behaviours like smoking (Strine et al., 2012).

1.4. Prior research leading to the present study

The present study builds upon the work of Supke et al. (2025), which investigated the intergenerational transmission of ACEs from parents to their children in Germany, with a focus on sex-specific effects. The same sample (290 emerging adults [145 son and 145 daughters], 268 mothers, and 137 fathers – recruited in 2001/2002) was used in this present study. The representativeness of ACE prevalence rates appeared to be particularly limited among mothers, as they reported significantly more ACEs than typically observed in the German population. Overall, the findings indicated that both daughters and mothers reported significantly more ACEs than fathers and sons. Approximately half of the emerging adults reported a number of ACEs comparable to that of their parents; however, the specific types of adversities experienced often differed, suggesting a shift in the nature of ACEs across generations. Importantly, a considerable proportion of emerging adults reported fewer ACEs

than their parents, highlighting potential transgenerational improvements.

The current study seeks to extend these findings by further examining the intergenerational dynamics of ACE transmission.

1.5. The present study

To address the following research questions, I utilized data from a German longitudinal study spanning 18 years, which included information from mothers, fathers, and their emerging adults, beginning in early childhood (kindergarten age). By incorporating long-term, multi-informant data from both parents and emerging adults, this study addresses key limitations of prior research – namely, the scarcity of extended longitudinal designs and the underrepresentation of paternal and sex-specific perspectives. The central objective was to identify familial factors that influence whether the next generation experiences a greater or lesser number of ACEs within the family context. Findings from this research may improve the development of more targeted and effective prevention strategies. The present study addresses the following research questions:

Research Question 1: How strong is the association between parental and offspring ACEs? Based on previous research (Bunting et al., 2022; Madigan et al., 2019), the associations are expected to fall within the small to moderate range.

Research Question 2: How many emerging adults show an improvement or deterioration in their ACE group compared to their parents? To the best of my knowledge, there is no specific research on this topic, and therefore, no specific hypotheses can be formulated.

Research Question 3: Which maternal and paternal factors are associated with an improvement or deterioration in emerging adults' ACE group membership across generations? Based on the existing body of research, it can be assumed that a higher number of parental ACEs, lower socioeconomic status, more dysfunctional parenting behaviours, and greater psychological distress in both parents and emerging adults are associated with a higher likelihood of deterioration in emerging adults' ACE group membership.

2. Method

2.1. Sample recruitment and baseline sample characteristics

The 'Future Family' (FF) project is a longitudinal research project that commenced in 2001/2002 and comprises two initial sub-studies. The first study, FF I (Heinrichs 2006a), was implemented as a randomized controlled trial, while the second study, FF II

(Heinrichs 2006b), was conducted as a non-controlled trial. Both studies aimed to evaluate the effectiveness and long-term impact of the Positive Parenting Programme (Triple P; Sanders et al., 2014). The FF II study was initiated to address the underrepresentation of families from lower socioeconomic backgrounds observed in FF I. Subsequent follow-up studies were conducted to investigate long-term outcomes. The FF III study represents the 10-year follow-up (FU10; Hahlweg & Schulz, 2018), while the FF IV study extends the follow-up period to 18 years (FU18) for participants from both the FF I and FF II studies. These follow-up studies employed a longitudinal design to evaluate the long-term effectiveness of the Triple P and to predict mental health outcomes in participants as they transitioned into adolescence and emerging adulthood.

For the initial assessment (Pre), families with children aged 2.5 to 6 years were recruited from 17 kindergartens in Braunschweig (a large German city). Families were recruited through project promotion within the kindergartens and could then decide whether they were interested in participating. The original sample comprised $N = 477$ families (FF-I: $n = 280$ families, FF-II: $n = 197$ families). At Pre, the mothers' average age was $M = 35.2$ years ($SD = 5.0$), the fathers' average age was $M = 38.8$ years ($SD = 6.0$), and the children's average age was $M = 4.1$ years ($SD = 1.0$).

In the follow-up assessments, all families who had given prior consent were recontacted via phone or email ($N = 471$, 6 families had requested no further contact). There were no additional inclusion or exclusion criteria for participation in the follow-ups. A total of $n = 458$ families participated in the one-year follow-up (FU1; retention rate: 96%); $n = 449$ families participated in the two-year follow-up (FU2; 94.1%); $n = 361$ families continued to participate after 10 years (FU10; 75.7%), and $n = 316$ families participated in the 18-year follow-up (FU18; retention rate: 67.1%). The main reason for drop-out was the inability to contact families due to outdated contact information (e.g. no updated contact details following a move).

2.2. Sample characteristics at the 18-year follow-up

Eighteen years after the initial assessment, data were available from 316 families. At this assessment point, the emerging adults were on average 22.3 years old ($SD = 1.2$). The sex distribution in our sample was nearly balanced, with 48% female and 52% male participants. School education of emerging adults: without a school leaving certificate/9 classes 10% ($n = 30$), 10 classes 18% ($n = 55$), and A-levels/high school 73% ($n = 229$). The mean age of mothers was 53.5 years ($SD = 4.8$), and that of fathers was 56.5 years

($SD = 4.9$). School education of mothers/fathers: without a school leaving certificate/9 classes 9% ($n = 24$) / 15% ($n = 32$), 10 classes 37% ($n = 103$) / 24% ($n = 51$), A-levels/high school 55% ($n = 152$) / 61% ($n = 130$). In terms of socioeconomic status (SES), only 2% ($n = 5$) of families were classified as having a low SES, while 46% ($n = 130$) fell into the middle SES category, and 52% ($n = 151$) into the high SES category. Additionally, 19% ($n = 59$) of families had a migration background. Two-thirds of the families (67%) participated in the Triple P programme as part of the experimental condition, while the control group received no intervention. Therefore, the data should be interpreted within the framework of an intervention study. The emerging adults in the intervention group and control group did not differ in the number of experienced ACEs at FU18 ($t(156) = 1.30$, $p = .98$, $d = 0.18$).

Significant sociodemographic differences were observed at pre-assessment between families who participated in the FU18 follow-up and those who did not (dropouts). Dropout families were more likely to be single-parent households ($p < .001$), had a lower socio-economic status ($p < .001$), and had a migration background ($p = .036$) more frequently. Additionally, mothers in the dropout group were significantly younger ($p < .001$) and reported more baseline symptoms of psychopathology ($p = .027$) compared to those who participated at FU18. Consequently, the representativeness of the FU18 sample is limited relative to the full baseline sample.

To assess the comparability of the sample at the pre-assessment, ANOVAs were computed to compare the three ACE groups (0, 1–3, and ≥ 4 ACEs) based on the four independent variables included in the current study: internalizing (CBCL; $M_0 = 51.0$, $SD_0 = 9.9$; $M_{1-3} = 50.2$, $SD_{1-3} = 9.4$; $M_{\geq 4} = 55.4$, $SD_{\geq 4} = 11.0$) and externalizing symptoms (CBCL; $M_0 = 51.7$, $SD_0 = 9.9$; $M_{1-3} = 51.3$, $SD_{1-3} = 9.7$; $M_{\geq 4} = 52.0$, $SD_{\geq 4} = 12.9$), maternal dysfunctional parenting behaviour (EFB; $M_0 = 3.2$, $SD_0 = 0.6$; $M_{1-3} = 3.3$, $SD_{1-3} = 0.5$; $M_{\geq 4} = 3.4$, $SD_{\geq 4} = 0.6$), and maternal mental health problems (DASS; $M_0 = 20.5$, $SD_0 = 14.4$; $M_{1-3} = 26.4$, $SD_{1-3} = 18.6$; $M_{\geq 4} = 24.0$, $SD_{\geq 4} = 16.2$). The results showed that emerging adults in the ≥ 4 ACEs group reported the highest levels of internalizing symptoms in kindergarten, significantly ($F(2, 284) = 3.1$, $p < .045$, $\eta^2 = .02$) more than those in the 1–3 ACEs group (Tukey $p = .034$). Furthermore, mothers in the 1–3 ACEs group reported the highest mental health symptoms at the pre-assessment, which was significantly ($F(2, 284) = 4.1$, $p < .018$, $\eta^2 = .03$) higher compared to mothers in the 0 ACEs group (Tukey $p = .013$).

2.3. Procedure

The FU18 survey comprised a combination of structured personal interviews – conducted separately

with parents and emerging adults to assess sociodemographic information, general health, relationships, leisure activities, and other aspects – and a battery of standardized questionnaires. Up to FU10, interviews were conducted in person during home visits; however, due to the COVID-19 pandemic, FU18 assessments were predominantly administered via telephone. Questionnaire data were collected online before and during the interviews using the SurveyMonkey platform (<https://www.surveymonkey.de>), allowing participants to respond to sensitive topics, such as sexuality or mobbing experiences, privately rather than directly to the interviewer. To compensate for their time and participation in the approximately 2.5-hour assessment, both emerging adults and parents received €50 each. Only one child per family was interviewed over the 18 years (always the same child). One parent conducted the interview, with the choice of which parent was responsible left to the family. In cases where the parents were separated (40.5% at FU18, $n = 115$), the young adult was asked which parent they had the closest contact with, and efforts were made to contact that parent. Written informed consent was obtained from all participants prior to participation, and the study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of the German Psychological Society (DGPs; ID: WS 12_2010) and the Independent Ethics Committee of Technische Universität Braunschweig (ID: D-2019-01; Faculty of Life Sciences).

2.4. Measures

2.4.1. Dysfunctional parenting practices (EFB; Pre)

Dysfunctional parenting practices of mothers and fathers were assessed using the German version (Naumann et al., 2010) of the Parenting Scale (Arnold et al., 1993). The questionnaire consists of 35 items rated on a 7-point scale. These items form three subscales: laxness, over-reactivity, and hostility. Individual item scores were averaged to compute a mean total score, with higher scores indicating a greater use of dysfunctional parenting strategies – such as overreaction ('After there's been a problem with my child ...' [1] ... I often hold a grudge.' or [7] ... things get back to normal quickly.'). In the present sample, internal consistency was rated as good (Pre: $\alpha_{\text{mothers}} = .87/\alpha_{\text{fathers}} = .86$).

2.4.2. Parental mental health (DASS; Pre)

Parental mental health was assessed using the German version (Schulz et al., 2024) of the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995). Both mothers and fathers completed this 42-item self-report questionnaire, which measures symptoms of depression, anxiety, and stress across three

subscales (14 items each) and their severity. An example item is: 'I felt I wasn't worth much as a person.' – 0 = 'Did not apply to me at all' or 3 = *Applied to me very much or most of the time*. Higher total scores indicate greater symptom severity and poorer mental health over the past four weeks. In the present sample, internal consistency was rated as excellent (Pre: $\alpha_{\text{mothers}} = .95/\alpha_{\text{fathers}} = .93$).

2.4.3. Child mental health problems in kindergarten (CBCL; Pre)

The FF project adopted the concept of evidence-based multimodal assessment (Döpfner et al., 2014). The Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001) was selected for its appropriateness in longitudinal research and its capacity to assess mental health problems in a developmentally sensitive manner. Parent-reported data on their child's mental health during kindergarten (at Pre) were collected using the German versions of the Child Behavior Checklist (CBCL). Mothers and fathers responded to 110 items (e.g. 'Demands a lot of attention'), rating the frequency of specific child behaviours on a 3-point Likert scale (0 = *not true*; 1 = *somewhat or sometimes true*; 2 = *very true or often true*). Scores were computed for internalizing problems (e.g. depressive symptoms) and externalizing problems (e.g. aggressive behaviour), with higher scores indicating greater symptom severity during the last six months in the respective domain. Internal consistency was high, with Cronbach's $\alpha = .94$ for mothers and $\alpha = .96$ for fathers.

2.4.4. Adverse childhood experiences (ACE-D; FU18)

The ACE-D (Wingenfeld et al., 2011) is the German adaptation of the original Adverse Childhood Experiences Questionnaire developed by Felitti and colleagues (Felitti et al., 1998). Mothers, fathers, and their emerging adults each completed 10 dichotomous items (1 = *yes*; 0 = *no*) assessing ACEs, including sexual abuse, neglect, and the presence of mental illness in the household. Individual item responses were summed to calculate a cumulative ACE score ranging from 0 to 10, representing the number of potentially traumatic events experienced during childhood and adolescence up to the age of 18. In the current sample, internal consistencies on the ACE-D were acceptable, with Cronbach's $\alpha = .76$ for mothers, $\alpha = .73$ for fathers, and $\alpha = .73$ for emerging adults.

2.5. Statistical analyses

ACE-D data were available for 290 emerging adults, 268 mothers, and 137 fathers from the 316 families who participated at FU18. Since some analyses required ACE data from dyads, it was not always

possible to include all available data in the analyses. As the data are not assumed to be missing completely at random – as indicated by the dropout analyses – I decided against imputing missing values prior to analyses (Dettori et al., 2018). To ensure transparency, I always report the sample size used in each analysis.

The sex-specific analyses should be considered exploratory, as the sample size is significantly reduced in this context. First, the prevalence rates of ACEs were reported. To address Research Question 1 – examining the extent to which parental and emerging adults' ACEs are associated – Pearson correlation coefficients were calculated using the total ACE-D scores. The correlations were Bonferroni-corrected. Second, the improvement or deterioration in emerging adults' ACE groups compared to their parents was analyzed descriptively (Research Question 2). ACE total scores were used to categorize individuals into the three common groups in the literature (based on the classification from the Adverse Childhood Experiences Questionnaire (ACE-Q) by Felitti et al., 1998): 0 ACEs – lowest risk for poor health outcomes, 1–3 ACEs – low to moderate risk for poor health outcomes, and ≥ 4 ACEs – highest risk for poor health outcomes. Changes in ACEs were evaluated at the group level, as a shift in group membership reflects a much higher or lower risk for poorer/better health outcomes than a change in the total ACE score by a single event from one generation to the next. To identify parental risk and protective factors associated with improvement or deterioration in children's ACE group membership (Research Question 3), multinomial logistic regression analyses were conducted. The outcome variable comprised three categories: stability (serving as the reference category), improvement (one or two groups better than their parents), and deterioration (one or two groups worse than their parents) in the emerging adults' ACE group compared to their parent. The aim was to examine which maternal and paternal factors are associated with a shift in ACE group membership across generations, in comparison to emerging adults who remained in the same group as their parents. The following predictors were included in the multinomial logistic regression models: age of the emerging adult and parent, emerging adults' sex, participation in the Triple P, socioeconomic status, child internalizing and externalizing mental health problems, parental mental health problems, and dysfunctional parenting strategies. Parental ACE scores were not included as predictors in the models, as the outcome variable was based on these scores. Including them would have led to redundancy, as they consistently emerged as the strongest predictors and accounted for a substantial proportion of the variance in the models. An examination of variance inflation factors indicated

no multicollinearity among the remaining predictors (all values below 5).

The paternal logistic regression model did not reach statistical significance. Additionally, separate multinomial logistic regression models were conducted for sons and daughters with maternal and paternal predictors, respectively. However, none of these sex-specific models reached statistical significance, likely due to the reduced sample size. Therefore, neither the results of the paternal model nor the results of the sex-specific models were reported.

3. Results

3.1. Prevalence rates of adverse childhood experiences

On average, mothers ($M = 1.6$, $SD = 2.0$, Range: 0–10) reported significantly ($t(403) = 4.7$, $p < .001$, $d = 0.44$) more ACEs than fathers ($M = 0.8$, $SD = 1.5$, Range: 0–6). Similarly, among emerging adults, daughters ($M = 1.5$, $SD = 2.1$, Range: 0–9) reported significantly ($t(288) = 3.5$, $p < .001$, $d = 0.41$) more ACEs than sons ($M = 0.8$, $SD = 1.1$, Range: 0–7).

In terms of prevalence rates, mothers reported the highest rates of ACEs (see Table 1). Most commonly, they reported experiences of *emotional neglect* (26.1%), *parental divorce/separation* (25.4%), *emotional abuse* (25.0%), and *alcohol or drug abuse in the household* (23.1%) – each reported by approximately one in four mothers. Fathers reported ACEs less frequently overall, with the most reported experiences being *parental divorce/separation* (21.2%), *emotional abuse* (12.4%), and *alcohol or drug abuse in the household* (10.9%). A similar pattern was observed among their emerging adults, who most frequently reported *parental divorce/separation* (23.4%), *emotional neglect* (19.3%), and *emotional abuse* (14.5%). Additionally, *mental illness in the household* (23.1%) was the second most reported ACE among the emerging adults. Mothers (14.9%) were most frequently represented in the high-risk group (≥ 4 ACEs), followed by their emerging adults (9.3%) and then fathers (8.0%).

3.2. Research question 1: correlations between parental and child adverse childhood experiences

In total, seven correlations were calculated, resulting in a Bonferroni-corrected significance level of $p = .05/7 = .007$. There was a small but significant correlation between mothers and their emerging adults in total ACE scores ($n = 247$, $r = .27$, $p < .001$). The correlation between fathers and their emerging adults was slightly lower and did not reach the corrected significance threshold ($n = 137$, $r = .19$, $p = .034$). In contrast,

Table 1. Prevalence rates of adverse childhood experiences in our sample.

	Emotional abuse	Physical abuse	Sexual abuse	Emotional neglect	Physical neglect	Parental divorce/separation	Witnessed domestic violence	Alcohol and drug abuse in the household	Mental illness in the household	Incarcerated family member	0 ACE	1-3 ACEs	≥ 4 ACEs
Mothers (n = 268)	25.0	17.2	14.2	26.1	6.0	25.4	5.2	23.1	19.0	2.6	38.4	46.6	14.9
Fathers (n = 137)	12.4	9.5	0.7	8.8	1.5	21.2	5.1	10.9	8.8	2.9	64.2	27.7	8.0
Emerging adults (n = 290)	14.5	5.5	5.9	19.3	4.8	23.4	3.8	14.1	23.1	2.8	45.9	44.8	9.3
Daughters (n = 145)	18.6	7.6	10.3	28.3	7.6	26.2	5.5	16.6	26.9	3.4	44.8	40.0	15.2
Sons (n = 145)	10.3	3.4	1.4	10.3	2.1	20.7	2.1	11.7	19.3	2.1	46.9	49.7	3.4

Note. The values are reported in percentages (%).

no meaningful correlation was observed between the total ACE scores of mothers and fathers ($n = 126$, $r = -.05$, $p = .559$).

When examining sex-specific differences, the correlation between mothers and their daughters ($n = 125$, $r = .35$, $p < .001$) was the strongest, while the correlation between mothers and their sons was almost non-existent and not statistically significant ($n = 123$, $r = .03$, $p = .714$). Among fathers, the correlations with both daughters ($n = 69$, $r = .20$, $p = .094$) and sons ($n = 59$, $r = .15$, $p = .251$) were of similar magnitude but both did not reach statistical significance.

3.3. Research question 2: stability, improvement or deterioration in emerging adults' ACE groups compared to their parents

In Table 2 the changes in ACE group membership from mothers and fathers to their emerging adults are presented. The table should be interpreted as follows: 47.4% of emerging adults remained in the same ACE group as their mother, while 33.6% showed an improvement in group membership and 19.0% showed a deterioration. For fathers, 50.0% of emerging adults remained in the same group, whereas the rate of improvement was lower (21.8%) and the rate of deterioration higher (28.1%) compared to mothers. Furthermore, changes of two ACE groups (e.g. from ≥ 4 ACEs to 0 ACEs) were observed only in a very small number of cases (improvement: 2.3%-4.0%; deterioration: 1.6%-3.1%).

Below the table, I provided additional information on the original number of ACEs reported by mothers and fathers. These data indicate that, despite the small subsample, substantial intergenerational change occurs among individuals reporting four or more ACEs. For example, 11 mothers and 5 fathers of sons reported ≥ 4 ACEs, yet none of these sons reported being in the same ACE group themselves (see 'stable ≥ 4 ACEs'); instead, they were assigned to a lower-risk group. A similar pattern of improvement was observed among daughters.

3.4. Research question 3: which maternal factors are associated with an improvement or deterioration in emerging adults' ACE group membership across generations?

The maternal multinomial logistic regression model (Table 3) was statistically significant ($\chi^2 (18) = 434.85$, $p = .039$) and explained 14% of the variance in changes to emerging adults' ACE group membership. The results indicated that higher levels of dysfunctional maternal parenting behaviours ($p = .011$; $OR = 0.44$) significantly reduced the likelihood of an improvement in the emerging adults' ACE group. In contrast, a higher maternal socioeconomic status (p

Table 2. Stability, improvement, or deterioration rates in ACE group membership from parents to their emerging adults.

	From mothers to their ...			From fathers to their ...		
	Emerging adults In % (n)	Daughters In % (n)	Sons In % (n)	Emerging adults In % (n)	Daughters In % (n)	Sons In % (n)
Same Group	47.4 (117)	44.4 (55)	50.4 (62)	50.0 (64)	47.8 (33)	52.5 (31)
• Stable 0 ACEs	22.7 (56)	26.6 (33)	18.7 (23)	35.9 (46)	31.9 (22)	40.7 (24)
• Stable 1–3 ACEs	21.5 (53)	11.3 (14)	31.7 (39)	13.3 (17)	14.5 (10)	11.9 (7)
• Stable ≥ 4 ACEs	3.2 (8)	6.5 (8)	0.0 (0)	0.8 (1)	1.5 (1)	0.0 (0)
Better group	33.6 (83)	32.2 (40)	35.0 (43)	21.8 (28)	21.7(15)	22.0 (13)
• One better	29.6 (73)	27.4 (34)	31.7 (39)	19.5 (25)	18.8 (13)	20.3 (12)
• Two better	4.0 (10)	4.8 (6)	3.3 (4)	2.3 (3)	2.9 (2)	1.7 (1)
Worse group	19.0 (47)	23.4 (29)	14.6 (18)	28.1 (36)	30.4 (21)	25.4 (15)
• One worse	17.4 (43)	21.8 (27)	13.0 (16)	25.0 (32)	26.1 (18)	23.7 (14)
• Two worse	1.6 (4)	1.6 (2)	1.6 (2)	3.1 (4)	4.3 (3)	1.7 (1)

Notes. Distribution of ACE group membership among all mothers: 0 ACEs: 38.9% ($n = 96$); 1–3 ACEs: 46.6% (115); ≥ 4 ACEs: 14.6% (36); mothers of daughters: 0 ACEs: 45.2% (56); 1–3 ACEs: 34.7% (43); ≥ 4 ACEs: 20.2% (25); mothers of sons: 0 ACEs: 32.5% (40); 1–3 ACEs: 58.4% (72); ≥ 4 ACEs: 8.9% (11). Distribution of ACE group membership among all fathers: 0 ACEs: 64.1% ($n = 82$); 1–3 ACEs: 27.3% (35); ≥ 4 ACEs: 8.6% (11); fathers of daughters: 0 ACEs: 62.3% (43); 1–3 ACEs: 29.0% (20); ≥ 4 ACEs: 8.7% (6); fathers of sons: 66.1% (39); 1–3 ACEs: 25.4% (15); ≥ 4 ACEs: 8.5% (5).

= .037; $OR = 0.42$) was associated with a lower likelihood of deterioration in the emerging adults' ACE group across generations.

4. Discussion

Since ACEs are no longer preventable once they have occurred (Bourassa et al., 2023), preventing the transmission of ACEs from one generation to the next should be a priority in prevention efforts. However, there are still many research gaps, as longitudinal studies with data on ACEs across multiple generations are rare (Narayan et al., 2021). This gap was addressed by the present 18-year longitudinal study, which collected data from mothers, fathers, and children from kindergarten age to young adulthood. Additionally,

sex-specific differences were considered in the analyses. The findings provide valuable insights for the prevention of ACEs across generations.

4.1. Associations between adverse childhood experiences of parents and emerging adults

First, I examined the associations between parental and emerging adults' ACEs (Research Question 1). As in previous studies, I found small associations between generations. This suggests the presence of a transgenerational cycle of ACEs (e.g. Bunting et al., 2022; Madigan et al., 2019), yet it also indicates considerable variability (both deterioration and improvement) in ACE scores from one generation to the next. Interestingly, maternal ACEs were most strongly

Table 3. Results of the multinomial logistic regression model predicting improvement or deterioration in emerging adults' ACE group based on maternal factors in early childhood (Pre).

		Mothers /Emerging adults ($n = 227$)					
Reference category: Stability		B (SD)	p	Lower	OR	Upper	
Improvement	Age of the emerging adult	−0.83 (0.16)	.596	0.68	0.92	1.25	
	Age of the mother	−0.03 (0.04)	.440	0.91	0.97	1.04	
	Sex of the emerging adult (0 = male; 1 = female)	0.03 (0.32)	.917	0.56	1.03	1.92	
	Triple P (0 = no; 1 = participation)	0.29 (0.33)	.388	0.69	1.33	2.56	
	Socioeconomic status (0 = low/middle; 1 = high)	−0.41 (0.34)	.229	0.34	0.67	1.29	
	Child internalizing mental health problems (CBCL)	0.04 (0.02)	.110	0.99	1.04	1.09	
	Child externalizing mental health problems (CBCL)	0.01 (0.02)	.661	0.97	1.01	1.06	
	Mother mental health problems (DASS)	0.01 (0.01)	.263	0.99	1.01	1.03	
	Dysfunctional parenting (EFB)	−0.82 (0.32)	.011	0.24	0.44	0.83	
	Intercept	0.89 (1.77)	.614				
Deterioration	Age of the emerging adult	0.06 (0.19)	.744	.073	1.06	1.55	
	Age of the mother	0.05 (0.05)	.280	0.96	1.05	1.15	
	Sex of the emerging adult (0 = male; 1 = female)	0.48 (0.39)	.233	0.74	1.61	3.51	
	Triple P (0 = no; 1 = participation)	0.02 (0.41)	.968	0.46	1.02	2.25	
	Socioeconomic status (0 = low/middle; 1 = high)	−0.87 (0.42)	.037	0.19	0.42	0.95	
	Child internalizing mental health problems (CBCL)	−0.01 (0.03)	.972	0.94	1.00	1.06	
	Child externalizing mental health problems (CBCL)	0.02 (0.03)	.535	0.96	1.02	1.08	
	Mother mental health problems (DASS)	−0.02 (0.02)	.163	0.94	0.98	1.01	
	Dysfunctional parenting (EFB)	0.09 (0.39)	.816	0.51	1.09	2.33	
	Intercept	−3.51 (2.31)	.128				
	Model statistics			χ^2 (18) = 434.85, $p = .039$; $R^2 = .12$ (Cox & Snell), .14 (Nagelkerke)			

associated with daughters' ACEs, while no correlation was found with sons' ACEs. The correlations for fathers and their children were not statistically significant. These results suggest potential sex-specific associations and possibly underlying sex-specific mechanisms in the transgenerational transmission of ACEs. For example, maternal and paternal relationships with their children differ, daughters are sometimes slightly favoured compared to sons, and there are different emphases in parenting (see Jensen & Jorgensen-Wells, 2025; Schulz et al., 2023). Therefore, it is important to consider sex in future analyses, as doing so could provide valuable insights for targeted ACE prevention strategies.

4.2. Stability, improvement or deterioration in emerging adults' ACE groups

This intergenerational variability was further addressed in Research Question 2, which examined how many emerging adults' showed stability, improvement, or deterioration in their ACE group compared to their parents. Approximately half of the emerging adults' belonged to the same ACE group as their parents, while the other half experienced a change in group membership across generations. These findings support previous research suggesting that, in many families, there is a shift in the experience of maltreatment and ACEs (Madigan et al., 2019). In addition to stability and improvement, intergenerational deterioration in ACE group membership may also occur. A higher rate of improvement was observed from mothers to their emerging adults', whereas deterioration was more common from fathers to their emerging adults'. This may be explained by the finding that women, on average, report more ACEs, which provides more opportunities for changes in the next generation. Many fathers in our sample reported zero ACEs, making further improvement in their emerging adults' ACE group not possible.

Two findings are particularly noteworthy. First, most intergenerational changes appear to involve only a one group-level shift rather than large shifts across multiple groups. Emerging adults very rarely improved or deteriorated by two ACE groups. While such cases do occur, larger sample sizes will be necessary in future studies to investigate the mechanisms and contributing factors in these families. Second, parents who themselves reported experiencing ≥ 4 ACEs were often those whose emerging adults demonstrated improvement. The results provide hints that the stability of the high-risk ACE group across generations could be low. Interestingly, only a few daughters showed stable ≥ 4 ACEs group membership, while all affected sons improved in their ACE group. This points to further possible sex-specific patterns in the intergenerational

transmission of ACEs that should be examined in future research.

4.3. Maternal factors associated with an improvement or deterioration in emerging adults' ACE group membership

Finally, I examined the association between parental factors and changes in emerging adults' ACE group membership across generations (Research Question 3). Unfortunately, only the maternal multinomial logistic regression model reached statistical significance. In the maternal model, lower levels of dysfunctional parenting behaviours during the emerging adults' kindergarten years were associated with an increased likelihood of improvement in the emerging adults' ACE group. Additionally, a higher maternal socioeconomic status – reflected in higher education, better occupational status, and greater income – was associated with a decreased likelihood of deterioration in the emerging adults' ACE group. These findings align with the existing literature. The link between improved parental behaviour and reduced ACEs in the next generation aligns with previous research (Euser et al., 2015; Greene et al., 2020; Livings et al., 2023; Madigan et al., 2019; Purewal Boparai et al., 2018; Schofield et al., 2013; Turgeon et al., 2024). Furthermore, the association between greater financial, social, and material resources and fewer ACEs within families was also highlighted in reviews by Greene et al. (2020) and van IJzendoorn et al. (2020).

However, maternal age, child age, and the mental health of both mothers and children did not appear to play a significant role, which contrasts with the findings of Langevin et al. (2021) and Bunting et al. (2022). Bunting et al. (2022) found several factors linked to higher ACE exposure in adolescents, including poor child health, limited family support, fewer siblings, older child age, household benefits, and younger parental age. However, their focus was on adolescents, while my study examines early childhood, where different factors may apply. The mental health of children and mothers was not significant in my model. One possible reason is that children's mental health was rated by their mothers, which could introduce bias. Another possibility is that mental health assessed at a later stage – for example, during school age or adolescence using self-reported data – might serve as a stronger predictor.

Overall, only 14% of the variance in the maternal model could be explained by the predictors. One reason may be that the predictors were assessed at kindergarten age (more than 18 years prior to the ACE assessment) and are therefore only partially suitable

for prediction; another possible explanation is that other childhood factors may serve as stronger predictors.

4.4. Clinical implications

The main findings of this study support elements of existing prevention efforts for ACEs, such as those outlined in the comprehensive technical package proposed by Fortson et al. (2016). This package includes a wide array of policy, normative, and programmatic strategies designed to prevent ACEs. My findings offer longitudinal evidence supporting two key strategies – *strengthening economic supports* and *enhancing parenting skills to promote healthy child development*. My study suggests that targeting dysfunctional parenting in preventive interventions may be associated with reduced exposure to ACEs in children and may buffer their mental health risks (Bravo et al., 2023; Lotto et al., 2023). This highlights two key benefits: disrupting the intergenerational transmission of ACEs, while also improving mental health outcomes in the next generation (Taraban & Shaw, 2018).

Participation in the Triple P did not emerge as a significant predictor of either improvement or deterioration in emerging adults' ACE group membership. In our previous work (Supke et al., 2025), we found that only daughters' total ACE scores were negatively associated with maternal participation in the Triple P. It is possible that the effects of the Triple P are not strong enough to shift children into a different ACE risk group entirely, although it may reduce the occurrence of individual ACEs. Alternatively, sex-specific mechanisms (see before; Jensen & Jorgensen-Wells, 2025; Schulz et al., 2023) may be involved, as only daughters showed fewer ACEs when their mothers participated. The role of fathers could not be examined due to their non-participation in Triple P and the limited sample size. Furthermore, in this project, Triple P was implemented at the average age of 4 years, by which time some ACEs had already occurred, indicating that prevention should begin much earlier to be more effective (van IJzendoorn et al., 2020). This highlights important questions about designing interventions to effectively disrupt the intergenerational cycle of ACEs, maltreatment, and family violence.

A meta-analysis by Euser et al. (2015) found that only 5 out of 20 evaluated intervention programmes were effective in preventing or reducing the risk of child maltreatment. Parent training programmes demonstrated greater treatment effectiveness compared to interventions that focused solely on providing general support (e.g. promoting healthy behaviours during early parenthood).

Livingston et al. (2023) conclude that effective interventions often involve long-term one-on-one

coaching and home visits to improve parenting, with benefits increasing over time. Most programmes focus on mothers, while father-specific interventions are rare, despite men often being perpetrators of family violence. Another review by Purewal Boparai et al. (2018) suggested that early timing of interventions, high-quality and nurturing parenting practices (e.g. increased responsiveness, warmth, sensitivity, and secure attachment), as well as high levels of intervention engagement, may contribute to improvements in various biological health outcomes among children exposed to adversity. Other reviews have also shown that safe, stable, and nurturing relationships along with overall family support and emotional warmth, may contribute to breaking the cycle of maltreatment in the next generation (Greene et al., 2020; Langevin et al., 2021; Madigan et al., 2019; Schofield et al., 2013).

Central components of interventions aimed at reducing maltreatment and ACEs within the family context should therefore include a strong emphasis on parenting practices, the quality of (family) relationships, and the strengthening of the broader familial environment (Euser et al., 2015; Greene et al., 2020; Langevin et al., 2021; Livingston et al., 2023; Madigan et al., 2019; Purewal Boparai et al., 2018; Schofield et al., 2013; Turgeon et al., 2024). The results of the current study support efforts to improve maternal parenting behaviour and to enhance socioeconomic resources. Initiating such interventions as early as during pregnancy may prove particularly effective (van IJzendoorn et al., 2020).

4.5. Limitations

When interpreting my results, several limitations must be considered. First, the generalizability of the findings is quite limited. The sample size used in my analyses was relatively small, especially for fathers and for the sex-specific analyses of children. Therefore, these results should be understood as exploratory. Furthermore, our sample predominantly consists of individuals from middle to upper socio-economic backgrounds, with lower socio-economic groups being underrepresented. Additionally, my dropout analyses revealed that the FU18 sample significantly differed from the baseline sample. Mothers who dropped out had a lower socioeconomic status, and showed more psychopathology – factors associated with higher risk for ACEs (Langevin et al., 2021; van IJzendoorn et al., 2020). Consequently, some of the more burdened families were lost from our sample, introducing bias into my analyses. As such, the findings cannot be directly applied to the general German population. The small sample size further reduced the statistical power of the analyses, especially in sex-specific and subgroup analyses where the sample decreased substantially. This increases the

likelihood that smaller effects remain undetected, which is problematic because over an 18-year period, small effects are expected. Small effects can still have significant importance in prevention efforts. Furthermore, the study is correlational in nature, meaning that no causal conclusions can be drawn. Another limitation is that the analyses included only biological sex, while the aspect of gender was not considered due to the small sample size. This would be an interesting point for future research, as sexual and gender minorities report higher rates of ACEs (McCabe et al. 2020).

Since this is an intervention sample, a large portion of the mothers participated in the Triple P, which may have influenced their parenting behaviour and potentially prevented the occurrence of ACEs, as ACEs were only assessed at FU18 for the emerging adults. This may have led to a reduction in the frequency of reported ACEs within the families.

Another limitation is that the data for prediction (at Pre) were collected when the children were aged 3–6 years. By this time, some ACEs may have already occurred or begun to occur, potentially already affecting certain predictors (e.g. poorer mental health in kindergarten). Moreover, the chronicity and severity of the ACEs were not assessed, meaning these aspects could not be considered in the analyses.

A further significant limitation is the retrospective nature of the ACEs assessment, which may have introduced recall bias, particularly among parents, as some ACEs occurred as long as 40 years ago or more. Adverse experiences may be downplayed, exaggerated, or misremembered, which is relevant given that I analyzed parent–child dyads; such distortions could lead to inaccurate group assignments. Previous studies have indicated that ACEs are sometimes inaccurately remembered, potentially leading to distortions in the data (Reuben et al., 2016).

One aspect not addressed in the present study is the role of Positive Childhood Experiences (PCEs; e.g. open family communication styles, having the ability to live and play in a safe, stable and protective environment or safe, stable, and nurturing relationships). PCEs have been associated with higher levels of well-being and lower rates of psychopathology (Blackwell et al., 2024; Han et al., 2023; Hinojosa & Hinojosa, 2024; Narayan et al., 2018). Importantly, PCEs and ACEs are related but not simply opposite constructs; they can coexist and exert independent influences on health outcomes (Blackwell et al., 2024; Han et al., 2023). Recent research (Blackwell et al., 2024) has shown that promoting PCEs can increase their occurrence in the next generation. Furthermore, parental ACEs have been positively associated with child PCEs, suggesting that children of parents with higher ACE exposure may experience a greater number of

PCEs (Morris et al., 2021). Further research is needed to deepen our understanding of the interplay between ACEs and PCEs and to clarify the transgenerational mechanisms underlying their transmission.

5. Conclusion

This study showed small associations between parental and emerging adults' ACE scores, supporting the notion of a transgenerational cycle of ACEs within families. At the same time, there was considerable variation, with evidence of both improvement and deterioration across generations. Notably, many emerging adults of parents in the high-risk group (reporting ≥ 4 ACEs) reported fewer ACEs themselves, suggesting that some families may be able to break the cycle of adversity. There were also indications of sex-specific mechanisms, but these could not be further examined due to the limited sample size.

Future research should investigate the intergenerational transmission of ACEs in a sex-sensitive manner and pay greater attention to the role of fathers. Furthermore, it could be examined whether there are differences between single-parent and two-parent households. Lower levels of dysfunctional maternal parenting behaviour during early childhood were associated with improvements in emerging adults' ACE group membership across generations, while a higher maternal socioeconomic status was associated with a reduced likelihood of deterioration. These findings highlight two important targets for early prevention efforts and support existing strategies aimed at reducing the prevalence and impact of ACEs. There are still only a few effective prevention programmes to reduce ACEs. Further research is needed to identify which specific parenting strategies – such as emotional warmth or parental sensitivity – are particularly beneficial, and how the broader family environment can be effectively supported and strengthened.

Acknowledgements

I would like to thank Dr. Ann-Katrin Job (the project lead) for providing access to the data. I would also like to thank Prof. Dr. Kurt Hahlweg and Prof. Dr. Wolfgang Schulz for their valuable feedback on my study. I thank all families for their great commitment to the project!

Authors' contributions

The author wrote the whole manuscript and performed the data analyses.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The Future Family projects were funded by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG; HA 1400/14-1, 2, 3/17-1, 2, JO 1632/1-1) and the Jacobs Foundation, Zurich (Switzerland). I acknowledge the financial support for Open Access publication from Technische Universität Braunschweig.

Ethics approval and consent to participate

Informed consent was obtained from all individual participants included in the ‘Future Family’ project. When the children were minors, informed consent for their participation in the study was obtained from a parent. The project was conducted according to the principles stated in the Declaration of Helsinki (64th WMA General Assembly, Fortaleza, Brazil, 2013). The project received ethical approval by the ethics committee of the German Psychological Society (DGPs; identification number: WS 12_2010) and by the independent ethics committee of the Technische Universität Braunschweig (identification number D-2019-01; Faculty of Life Sciences).

AI use statement

ChatGPT-4 (Version 4.0) was solely used to improve the language and grammar of this study.

Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available as they contain sensitive material. Furthermore, it is a longitudinal study with several assessment points. The data could possibly be used to draw conclusions about individuals. The questionnaires used can be found with the corresponding author.

ORCID

Max Supke  <http://orcid.org/0000-0002-3302-3407>

References

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms & profiles*. University of Vermont, Research Center for Children, Youth, and Families.
- Armfield, J. M., Gnanamanickam, E. S., Johnston, D. W., Preen, D. B., Brown, D. S., Nguyen, H., & Segal, L. (2021). Intergenerational transmission of child maltreatment in South Australia, 1986–2017: A retrospective cohort study. *The Lancet. Public Health*, 6(7), e450–e461. [https://doi.org/10.1016/S2468-2667\(21\)00024-4](https://doi.org/10.1016/S2468-2667(21)00024-4)
- Arnold, D. S., O’Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The parenting scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment*, 5(2), 137–144. <https://doi.org/10.1037/1040-3590.5.2.137>
- Blackwell, C. K., Cella, D., & Mansolf, M. (2024). Intergenerational transmission of adverse and positive childhood experiences and associations with child well-being. *Child Abuse & Neglect*, 157, 107050. <https://doi.org/10.1016/j.chiabu.2024.107050>
- Bourassa, K. J., Moffitt, T. E., Harrington, H., Houts, R., Poulton, R., Ramrakha, S., Rasmussen, L. J. H., Wertz, J., & Caspi, A. (2023). Childhood adversity and midlife health: Shining a light on the black box of psychosocial mechanisms. *Prevention Science*, 24(5), 817–828. <https://doi.org/10.1007/s11121-022-01431-y>
- Bravo, P., Kim, Y., Xerxa, Y., Koopman-Verhoeff, M. E., Cárcamo, R., Oldehinkel, A., Hillegers, M., & Jansen, P. (2023). Maternal history of maltreatment and offspring’s emotional and behavioral problems in adolescence: Do family factors contribute to the intergenerational risk transmission? *Child Abuse & Neglect*, 141, 106228. <https://doi.org/10.1016/j.chiabu.2023.106228>
- Bunting, L., McCartan, C., Davidson, G., Grant, A., Mulholland, C., Schubotz, D., McBride, O., Murphy, J., Nolan, E., & Shevlin, M. (2022). Experiences of childhood adversity across generations – continuity or change? A study from the Northern Ireland youth wellbeing survey. *Child Abuse & Neglect*, 127, 105568. <https://doi.org/10.1016/j.chiabu.2022.105568>
- Burke, C., Ellis, J. D., Peltier, M. R., Roberts, W., Verplaetse, T. L., Phillips, S., Moore, K. E., Marotta, P. L., & McKee, S. A. (2023). Adverse childhood experiences and pathways to violent behavior for women and men. *Journal of Interpersonal Violence*, 38(3-4), 4034–4060. <https://doi.org/10.1177/08862605221113012>
- Carlson, J. S., Yohannan, J., Darr, C. L., Turley, M. R., Larez, N. A., & Perfect, M. M. (2020). Prevalence of adverse childhood experiences in school-aged youth: A systematic review (1990–2015). *International Journal of School & Educational Psychology*, 8(sup1), 2–23. <https://doi.org/10.1080/21683603.2018.1548397>
- Centers for Disease Control and Prevention. (2016). CDC-Kaiser ACE study. *Centers for Disease Control and Prevention*.
- Cooke, J. E., Racine, N., Pador, P., & Madigan, S. (2021). Maternal adverse childhood experiences and child behavior problems: A systematic review. *Pediatrics*, 148(3), e2020044131. <https://doi.org/10.1542/peds.2020-044131>
- Dettori, J. R., Norvell, D. C., & Chapman, J. R. (2018). The sin of missing data: Is all forgiven by way of imputation? *Global Spine Journal*, 8(8), 892–894. <https://doi.org/10.1177/2192568218811922>
- Döpfner, M., Plück, J., & Kinnen, C. (2014). Deutsche Schulalter-Formen der Child Behavior Checklist von Thomas M. Achenbach [Manual for the Child Behavior Checklist 6-18R]. Hogrefe Verlag.
- Euser, S., Alink, L. R., Stoltenborgh, M., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2015). A gloomy picture: A meta-analysis of randomized controlled trials reveals disappointing effectiveness of programs aiming at preventing child maltreatment. *BMC Public Health*, 15(1), 1068. <https://doi.org/10.1186/s12889-015-2387-9>
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE)

- study. *American Journal of Preventive Medicine*, 14(4), 245–258. [https://doi.org/10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)
- Folk, J. B., Kemp, K., Yurasek, A., Barr-Walker, J., & Tolou-Shams, M. (2021). Adverse childhood experiences among justice-involved youth: Data-driven recommendations for action using the sequential intercept model. *The American Psychologist*, 76(2), 268–283. <https://doi.org/10.1037/amp0000769>
- Fortson, B. L., Klevens, J., Merrick, M. T., Gilbert, L. K., & Alexander, S. P. (2016). *Preventing child abuse and neglect: A technical package for policy, norm, and programmatic activities*. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.
- Grafft, N., Lo, B., Easton, S. D., Pinerros-Leano, M., & Davison, K. K. (2024). Maternal and paternal adverse childhood experiences (ACEs) and offspring health and wellbeing: A scoping review. *Maternal and Child Health Journal*, 28(1), 52–66. <https://doi.org/10.1007/s10995-023-03825-y>
- Greene, C. A., Haisley, L., Wallace, C., & Ford, J. D. (2020). Intergenerational effects of childhood maltreatment: A systematic review of the parenting practices of adult survivors of childhood abuse, neglect, and violence. *Clinical Psychology Review*, 80, 101891. <https://doi.org/10.1016/j.cpr.2020.101891>
- Haahr-Pedersen, I., Perera, C., Hyland, P., Vallières, F., Murphy, D., Hansen, M., Spitz, P., Hansen, P., & Cloitre, M. (2020). Females have more complex patterns of childhood adversity: Implications for mental, social, and emotional outcomes in adulthood. *European Journal of Psychotraumatology*, 11(1), 1708618. <https://doi.org/10.1080/20008198.2019.1708618>
- Hahlweg, K., & Schulz, W. (2018). Universelle Prävention kindlicher Verhaltensstörungen durch Elterntrainings. Wirksamkeit nach 10 Jahren aus Mütter-, Väter- und Jugendlichensicht [Universal prevention of child behavioral disorders by parent training: 10-year effectiveness from mothers', fathers', and adolescents' perspectives]. *Zeitschrift für Klinische Psychologie und Psychotherapie*, 47(1), 1–15. <https://doi.org/10.1026/1616-3443/a000462>
- Han, D., Dieujuste, N., Doom, J. R., & Narayan, A. J. (2023). A systematic review of positive childhood experiences and adult outcomes: Promotive and protective processes for resilience in the context of childhood adversity. *Child Abuse & Neglect*, 144, 106346. <https://doi.org/10.1016/j.chiabu.2023.106346>
- Heinrichs, N., Hahlweg, K., Bertram, H., Kuschel, A., Naumann, S., & Harstick, S. (2006a). Die langfristige Wirksamkeit eines Elterntrainings zur universellen Prävention kindlicher Verhaltensstörungen [The 1-year efficacy of a parent-training in the universal prevention of child-behavior problems: Results from mothers and fathers]. *Zeitschrift für Klinische Psychologie und Psychotherapie*, 35(2), 82–96. <https://doi.org/10.1026/1616-3443.35.2.82>
- Heinrichs, N., Krüger, S., & Guse, U. (2006b). Der Einfluss von Anreizen auf die Rekrutierung von Eltern und auf die Effektivität eines präventiven Elterntrainings [The effect of incentives on recruitment of parents and effectiveness of preventive parent training]. *Zeitschrift für Klinische Psychologie und Psychotherapie*, 35(2), 97–108. <https://doi.org/10.1026/1616-3443.35.2.97>
- Hinojosa, M. S., & Hinojosa, R. (2024). Positive and adverse childhood experiences and mental health outcomes of children. *Child Abuse & Neglect*, 149, 106603. <https://doi.org/10.1016/j.chiabu.2023.106603>
- Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. *The Lancet. Public Health*, 2(8), e356–e366. [https://doi.org/10.1016/S2468-2667\(17\)30118-4](https://doi.org/10.1016/S2468-2667(17)30118-4)
- Jensen, A. C., & Jorgensen-Wells, M. A. (2025). Parents favor daughters: A meta-analysis of gender and other predictors of parental differential treatment. *Psychological Bulletin*, 151(1), 33–47. <https://doi.org/10.1037/bul0000458>
- Kuzminkaite, E., Penninx, B. W. J. H., van Harmelen, A. L., Elzinga, B. M., Hovens, J. G. F. M., & Vinkers, C. H. (2021). Childhood trauma in adult depressive and anxiety disorders: An integrated review on psychological and biological mechanisms in the NESDA cohort. *Journal of Affective Disorders*, 283, 179–191. <https://doi.org/10.1016/j.jad.2021.01.054>
- Langevin, R., Marshall, C., & Kingsland, E. (2021). Intergenerational cycles of maltreatment: A scoping review of psychosocial risk and protective factors. *Trauma, Violence & Abuse*, 22(4), 672–688. <https://doi.org/10.1177/1524838019870917>
- Livings, M. S., Hsiao, V., & Withers, M. (2023). Breaking the cycle of family violence: A critique of family violence interventions. *Trauma, Violence & Abuse*, 24(4), 2544–2559. <https://doi.org/10.1177/15248380221098049>
- Lotto, C. R., Altafim, E. R. P., & Linhares, M. B. M. (2023). Maternal history of childhood adversities and later negative parenting: A systematic review. *Trauma, Violence & Abuse*, 24(2), 662–683. <https://doi.org/10.1177/15248380211036076>
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy*, 33(3), 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-u](https://doi.org/10.1016/0005-7967(94)00075-u)
- Madigan, S., Cyr, C., Eirich, R., Fearon, R. M. P., Ly, A., Rash, C., Poole, J. C., & Alink, L. R. A. (2019). Testing the cycle of maltreatment hypothesis: Meta-analytic evidence of the intergenerational transmission of child maltreatment. *Development and Psychopathology*, 31(1), 23–51. <https://doi.org/10.1017/S0954579418001700>
- McCabe, S. E., Hughes, T. L., West, B. T., Evans-Polce, R. J., Veliz, P. T., Dickinson, K., McCabe, V. V., & Boyd, C. J. (2020). Sexual orientation, adverse childhood experiences, and comorbid DSM-5 substance use and mental health disorders. *The Journal of Clinical Psychiatry*, 81(6), 20m13291. <https://doi.org/10.4088/JCP.20m13291>
- Moog, N. K., Cummings, P. D., Jackson, K. L., Aschner, J. L., Barrett, E. S., Bastain, T. M., Blackwell, C. K., Bosquet Enlow, M., Breton, C. V., Bush, N. R., Deoni, S. C. L., Duarte, C. S., Ferrara, A., Grant, T. L., Hipwell, A. E., Jones, K., Leve, L. D., Lovinsky-Desir, S., Miller, R. K., ... collaborators, E. C. H. O. (2023). Intergenerational transmission of the effects of maternal exposure to childhood maltreatment in the USA: A retrospective cohort study. *The Lancet. Public Health*, 8(3), e226–e237. [https://doi.org/10.1016/S2468-2667\(23\)00025-7](https://doi.org/10.1016/S2468-2667(23)00025-7)
- Morris, A. S., Hays-Grudo, J., Zapata, M. I., Treat, A., & Kerr, K. L. (2021). Adverse and protective childhood experiences and parenting attitudes: The role of cumulative protection in understanding resilience. *Adversity and Resilience Science*, 2(3), 181–192. <https://doi.org/10.1007/s42844-021-00036-8>

- Narayan, A. J., Lieberman, A. F., & Masten, A. S. (2021). Intergenerational transmission and prevention of adverse childhood experiences (ACEs). *Clinical Psychology Review*, 85, 101997. <https://doi.org/10.1016/j.cpr.2021.101997>
- Narayan, A. J., Rivera, L. M., Bernstein, R. E., Harris, W. W., & Lieberman, A. F. (2018). Positive childhood experiences predict less psychopathology and stress in pregnant women with childhood adversity: A pilot study of the benevolent childhood experiences (BCEs) scale. *Child Abuse & Neglect*, 78, 19–30. <https://doi.org/10.1016/j.chiabu.2017.09.022>
- Naumann, S., Bertram, H., Kuschel, A., Heinrichs, N., Hahlweg, K., & Döpfner, M. (2010). Der Erziehungsfragebogen (EFB). Ein Fragebogen zur Erfassung elterlicher Verhaltenstendenzen in schwierigen Erziehungssituationen [The Erziehungsfragebogen (EFB): An instrument to assess parental behavioral tendencies in discipline situations with your children.]. *Diagnostica*, 56(3), 144–157. <https://doi.org/10.1026/0012-1924/a000018>
- Nelson, J., Klumpparendt, A., Doebler, P., & Ehring, T. (2017). Childhood maltreatment and characteristics of adult depression: Meta-analysis. *The British Journal of Psychiatry*, 210(2), 96–104. <https://doi.org/10.1192/bjp.bp.115.180752>
- Petrucelli, K., Davis, J., & Berman, T. (2019). Adverse childhood experiences and associated health outcomes: A systematic review and meta-analysis. *Child Abuse & Neglect*, 97, 104127. <https://doi.org/10.1016/j.chiabu.2019.104127>
- Purewal Boparai, S. K., Au, V., Koita, K., Oh, D. L., Briner, S., Burke Harris, N., & Bucci, M. (2018). Ameliorating the biological impacts of childhood adversity: A review of intervention programs. *Child Abuse & Neglect*, 81, 82–105. <https://doi.org/10.1016/j.chiabu.2018.04.014>
- Qu, G., Shu, L., Liu, H., Ma, S., Han, T., Zhang, H., Huang, C., Wang, J., Yang, L., & Sun, Y. (2024). Association between adverse childhood experiences and academic performance among children and adolescents: A global meta-analysis. *Trauma, Violence & Abuse*, 25(4), 3332–3345. <https://doi.org/10.1177/15248380241246758>
- Racine, N., Plamondon, A., Madigan, S., McDonald, S., & Tough, S. (2018). Maternal adverse childhood experiences and infant development. *Pediatrics*, 141(4), e20172495. <https://doi.org/10.1542/peds.2017-2495>
- Reuben, A., Moffitt, T. E., Caspi, A., Belsky, D. W., Harrington, H., Schroeder, F., Hogan, S., Ramrakha, S., Poulton, R., & Danese, A. (2016). Lest we forget: Comparing retrospective and prospective assessments of adverse childhood experiences in the prediction of adult health. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 57(10), 1103–1112. <https://doi.org/10.1111/jcpp.12621>
- Sanders, M. R., Kirby, J. N., Tellegen, C. L., & Day, J. J. (2014). The triple P-positive parenting program: A systematic review and meta-analysis of a multi-level system of parenting support. *Clinical Psychology Review*, 34(4), 337–357. <https://doi.org/10.1016/j.cpr.2014.04.003>
- Schofield, T. J., Lee, R. D., & Merrick, M. T. (2013). Safe, stable, nurturing relationships as a moderator of intergenerational continuity of child maltreatment: A meta-analysis. *The Journal of Adolescent Health*, 53(4 Suppl), S32–S38. <https://doi.org/10.1016/j.jadohealth.2013.05.004>
- Schulz, W., Hahlweg, K., Job, A. K., & Supke, M. (2024). Prevalence, persistence, and course of symptoms of depression, anxiety, and stress of mothers and fathers. Results of an 18-year longitudinal study. *Journal of Affective Disorders*, 344, 301–310. <https://doi.org/10.1016/j.jad.2023.10.005>
- Schulz, W., Hahlweg, K., & Supke, M. (2023). Predictors of fathers' participation in a longitudinal psychological research study on child and adolescent psychopathology. *Journal of Child and Family Studies*, 32(1), 1666–1680. <https://doi.org/10.1007/s10826-022-02521-9>
- Strine, T. W., Edwards, V. J., Dube, S. R., Wagenfeld, M., Dhingra, S., Prehn, A. W., Rasmussen, S., McKnight-Eily, L., & Croft, J. B. (2012). The mediating sex-specific effect of psychological distress on the relationship between adverse childhood experiences and current smoking among adults. *Substance Abuse Treatment, Prevention, and Policy*, 7(1), 30. <https://doi.org/10.1186/1747-597X-7-30>
- Supke, M., Hahlweg, K., Schulz, W., & Job, A. K. (2025). Sex-specific differences in the experience of adverse childhood experiences: Transmission, protective, and risk factors from the perspectives of parents and their children—results of an 18-year German longitudinal study. *Child and Adolescent Psychiatry and Mental Health*, 19(1), 46. <https://doi.org/10.1186/s13034-025-00904-6>
- Tadjine, L., & Swords, L. (2025). I just wouldn't like him to go through what I went through as a kid": A qualitative study on the mitigating effects of positive childhood experiences in mothers with a history of adverse childhood experiences in an Irish population. *Community Mental Health Journal*, 61(3), 492–501. <https://doi.org/10.1007/s10597-024-01353-9>
- Taraban, L., & Shaw, D. S. (2018). Parenting in context: Revisiting Belsky's classic process of parenting model in early childhood. *Developmental Review*, 48, 55–81. <https://doi.org/10.1016/j.dr.2018.03.006>
- Turgeon, J., Racine, N., McDonald, S., Tough, S., & Madigan, S. (2024). Maternal adverse childhood experiences, child resilience factors, and child mental health problems: A multi-wave study. *Child Abuse & Neglect*, 154, 106927. <https://doi.org/10.1016/j.chiabu.2024.106927>
- van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Coughlan, B., & Reijman, S. (2020). Annual research review: Umbrella synthesis of meta-analyses on child maltreatment antecedents and interventions: Differential susceptibility perspective on risk and resilience. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 61(3), 272–290. <https://doi.org/10.1111/jcpp.13147>
- Wingenfeld, K., Schäfer, I., Terfehr, K., Grabski, H., Driessen, M., Grabe, H., Löwe, B., & Spitzer, C. (2011). The reliable, valid and economic assessment of early traumatization: First psychometric characteristics of the German version of the Adverse Childhood Experiences Questionnaire (ACE). *Psychotherapie, Psychosomatik, Medizinische Psychologie*, 61(1), e10–e14. <https://doi.org/10.1055/s-0030-1263161>
- Yang, Y., Cheng, J., & Liu, P. (2023). Impacts on children's health of adverse childhood experiences of their mothers: A gender-specific mediation analysis using data from the China health and retirement longitudinal study. *Journal of Affective Disorders*, 323, 232–240. <https://doi.org/10.1016/j.jad.2022.11.057>

Yu, J., Patel, R. A., Haynie, D. L., Vidal-Ribas, P., Govender, T., Sundaram, R., & Gilman, S. E. (2022). Adverse childhood experiences and premature mortality through mid-adulthood: A five-decade prospective study. *Lancet Regional Health. Americas*, *15*, 100349. <https://doi.org/10.1016/j.lana.2022.100349>

Zhang, L., Mersky, J. P., Gruber, A. M. H., & Kim, J. Y. (2023). Intergenerational transmission of parental adverse childhood experiences and children's outcomes: A scoping review. *Trauma, Violence & Abuse*, *24*(5), 3251–3264. <https://doi.org/10.1177/15248380221126186>