Child Abuse & Neglect 106 (2020) 104487

Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/chiabuneg

Risk factors for child abuse, neglect and exposure to intimate partner violence in early childhood: Findings in a representative cross-sectional sample in Germany

Christoph Liel[a,*], Susanne M. Ulrich[a], Simon Lorenz[a], Andreas Eickhorst[a,c], John Fluke[b], Sabine Walper[a]

[a] National Centre for Early Prevention, German Youth Institute, Department of Families and Family Policies, Munich, Germany
[b] Kempe Center for the Prevention of Treatment of Child Abuse and Neglect, Department of Pediatrics, University of Colorado, United States
[c] Hannover University of Applied Sciences and Arts, Faculty V of Diaconic Studies, Health Care and Social Work, Hannover, Germany

ARTICLE INFO

Keywords:
Child abuse
Child neglect
Child exposure to intimate partner violence
Risk factors
Prevalence
Early childhood
Epidemiology

ABSTRACT

Background: The KiD 0–3 national main study is a cross-sectional study on adversity in early childhood and parental access to support services, conducted as part of a long-term policy program for early intervention services in Germany.
Objective: To identify risk factors for child abuse, neglect and exposure to intimate partner violence (IPV) and investigate if parental use of early intervention programs or contact to child welfare services was associated with reported child maltreatment.
Participants and setting: 8063 families with infants and toddlers participated in the survey. Parents answered a written questionnaire during mandatory health checks for the child. The sampling was based on a regionally clustered model of pediatricians' practices.
Methods: An automatic variable selection process was used to test risk factors and logistic regression models were employed for each outcome.
Results: Significant risk factors ($p < 0.05$) for child abuse (1.91 %) were child age, IPV and parental stress. Neglect (0.83 %) was associated with couple distress, adverse childhood experiences, young maternal age, cramped housing, and migration history. IPV (2.98 %) was associated with child age, couple distress, depression/anxiety, harsh punishment, adverse childhood experiences, young maternal age, and poverty. Parents were more likely to use selective prevention programs in cases of child abuse and exposure to IPV.
Conclusion: Child abuse is mainly associated with proximal risk factors and neglect with distal factors. Exposure to IPV violence is associated with child abuse as well as with an accumulation of adversities. The association between service use and child maltreatment is discussed.

1. Background

Experiences of physical and emotional abuse as well as neglect in childhood have been shown to contribute to a broad range of long-term health problems, including depression, anxiety, drug use, suicide attempts and sexually transmitted infections (Felitti et al., 1998; Li, D'Arcy, & Meng, 2016; Norman et al., 2012). Accordingly, it is of major importance to identify and mitigate conditions that increase the risk of dysfunctional, abusive and neglectful parenting.

* Corresponding author at: German Youth Institute, Department of Families and Family Policies, Nockherstr. 2, D-81541 Munich, Germany.
E-mail address: liel@dji.de (C. Liel).

https://doi.org/10.1016/j.chiabu.2020.104487
Received 28 November 2019; Received in revised form 20 February 2020; Accepted 29 March 2020

1.1. IPV as a dimension of child maltreatment

While many studies inform about child abuse and neglect (Epstein, 2001; Häuser, Schmutzer, Brähler, & Glaesmer, 2011; Stoltenborgh, Bakermans-Kranenburg, Alink, & van IJzendoorn, 2015) they often disregard other forms of family violence which are no less important for children's well-being. In particular, intimate partner violence (IPV) and recurrent, intense interparental conflict have been highlighted as major threats to children's physical and emotional security in the family system (Howell, Barnes, Miller, & Graham-Bermann, 2016; Davies & Cummings, 2006; Geffner, Jaffe, & Sudermann, 2000; Graham, Kim, & Fisher, 2012; Henry, 2018; Lawson, 2019). Child exposure to IPV evidences high rates of co-occurrence with abuse and neglect (Appel & Holden, 1998; Hamby, Finkelhor, Turner, & Ormrod, 2010) and should thus be included in more comprehensive accounts of child maltreatment. Furthermore, available research sometimes narrows the theoretical frame by focusing only certain dimensions (by theoretical approach; Begle, Dumas, & Hanson, 2010) or subsets of risk factors (by empirical testing; Doidge, Higgins, Delfabbro, & Segal, 2017). The present study seeks to overcome these shortcomings by providing comprehensive data on risk factors for child abuse and neglect as well as IPV based on a nationally representative sample of young children in Germany.

1.2. Risk factors for child abuse and neglect

Many risk factors for child abuse and neglect are already known, e.g. unplanned pregnancy, children's adjustment difficulties, negative attribution of child behavior, maternal depression or social isolation (Stith et al., 2009). However, it remains largely unknown whether specific risk factors trigger certain forms of child maltreatment more than others. In general, relevant risk factors have been identified as features of the child, the parents, the family system or the quality of family interactions (Belsky, 1993; Doidge et al., 2017). Other classifications distinguish between individual/proximal and contextual/distal factors (Bronfenbrenner, 1977). Distal factors are assumed to operate as long-term conditions, which are not necessarily causal to child abuse or neglect but affect the likelihood of its occurrence. For example, low income, low educational resources as well as difficult family conditions (e.g. receipt of Medicaid, high numbers of children in household) have been shown to increase the risk of child maltreatment (Kotch et al., 1995). Similarly, a socially disadvantaged environment (e.g. disorganized neighborhoods) may enhance this risk, but none of these factors functions as causal factor per se. Proximal factors like poor parental mental health are of more immanent relevance for family interaction and therefore often serve as target of (preventive) interventions (Ashiabi & O'Neal, 2015). The relation between proximal and distal risk factors can be seen as a causal chain with complex interactions: difficult life circumstances contribute to imminent problems (Dodge, 2005) like drug abuse. Such problems might mutually moderate or reinforce each other and finally result in child neglect (Dixon, Browne, & Hamilton-Giachritsis, 2005; Slack et al., 2011). Cumulative risk theory builds on the notion of a causal chain of risk factors and assumes that an accumulation of risk factors increases the probability of child maltreatment (Doidge et al., 2017).

1.3. Population data on child maltreatment

For Germany as well as other countries of Continental Europe there is little to no research available on the occurrence of child maltreatment at a population level.

Neither do we know the prevalence of child maltreatment (child abuse, neglect and exposure to IPV) among young children in the general population, nor do we know whether internationally established risk factors have similar effects on family violence in Germany. Some studies on child abuse and neglect in Germany have used retrospective self-report measures to assess the lifetime prevalence of these experiences among adolescents and adults (Iffland, Brähler, Neuner, Häuser, & Glaesmer, 2013; Witt et al., 2018). For example, Witt, Brown, Plener, Brähler, and Fegert, (2017) found overall lifetime prevalence rates of 2.3 % for child abuse and 9.0 % for child neglect among N = 2510 respondents aged 14–94.7. 1% of the participants reported emotional neglect, which includes witnessing of IPV. However, results of retrospective studies cannot be generalized to the present. More importantly, the risk for child maltreatment is known to be higher in the first years of life compared to older children and youth (Wu et al., 2004), but retrospective accounts are unlikely to capture these early experiences. Nearly no data on child maltreatment is available for the high-risk group of children aged 0–3 years. Only one study examined a local sample of N = 1022 preschool children in daycare centers by means of professionals' appraisal and found prevalence rates of 2.6 % for child abuse and 13.2 % for neglect (Thurn et al., 2017).

Across countries, studies on maltreatment in early childhood are scarce. In France, a recent study yielded prevalence rates up to 0.7 % for documented child abuse in hospitalized infants (0–1) (Gilard-Pioc et al., 2019). In Great Britain, Radford et al. (2011) have shown past year prevalence rates of 1.1 % (age 0–2) and 3.0 % (age 3–5) for all forms of child maltreatment including IPV. In the United States, past year prevalence rates ranged between 1.5 % (0–1) and 2.4 % (2–5) for child abuse, 2.8 % (2–5) for neglect (Finkelhor, Vanderminden, Turner, Hamby, & Shattuck, 2014) and 6.6 % for exposure to IPV (0–5) (Hamby et al., 2010). These rates were based on parental or child self-report measurement (Finkelhor, Hamby, Ormrod, & Turner, 2005).

1.4. The role of early intervention and its association with child maltreatment

Apart from intervention studies showing a mixed body of evidence (O'Reilly, Wilkes, Luck, & Jackson, 2010), little is known on a population level about how prevalence rates of child maltreatment are affected by parental use of early intervention services. While these programs aim to reduce child maltreatment, success is hard to achieve. For family preservation programs, Chaffin, Bonner, and Hill, (2001) found no differences in future rates of child maltreatment across the programs. Participation in family preservation

programs as well as counselling was shown to be associated with child maltreatment recurrence after prior incidents among families with children aged 0–4 (Palusci, 2011). Furthermore, participation in early intervention services may increase the likelihood of revealing child maltreatment. For children with special developmental needs or disabilities, Casanueva, Cross, and Ringeisen, (2008) found a two times higher likelihood of becoming a substantiated child protection case after participating in a targeted early intervention program. Hence, parents' past involvement in early intervention services and particularly their contact to child protection services are likely to be linked to child maltreatment.

Considering the respective aims of universal and targeted interventions, the latter can be expected to show stronger links to child maltreatment. In addition, access to these different services may vary by family risk factors. While involvement in targeted intervention is likely to be predicted by proximal risk factors of child maltreatment, universal to selective social-policy prevention strategies which address the broader population should rather be linked to distal risk factors (e.g. poverty).

1.5. Context of the present study

In 2008, a long-term policy program was launched in Germany to implement and expand early intervention programs and networks for early prevention (see https://www.fruehehilfen.de/). In order to provide baseline information about prevalence rates and relevant risk factors for child maltreatment, the nationwide survey *Kinder in Deutschland* – KiD 0–3 [Children in Germany aged 0–3]was conducted in 2015, addressing parents with children up to age three years. Building on these data, the present study aims to investigate a broad range of risk factors associated with child maltreatment in the first three years of life. Research questions were:

(1) Which risk factors are associated with parental reports of child abuse, neglect and exposure to IPV?
(2) To what extent do targeted prevention by early intervention programs and child protection services reach families with reported child maltreatment? Is parental use of early intervention programs or contact with child protection services associated with their reports of child abuse, neglect or exposure to IPV?

2. Methods

The KiD 0–3 national main study is a nationally representative German cross-sectional study which is part of a series of investigations aiming to examine the epidemiology of psychosocial adversity in infants and toddlers as well as to monitor families' use of early intervention services (Zimmermann et al., 2016). The KiD 0–3 studies were carried out as part of a long-term policy program which aims to expand early intervention programs in Germany (*Federal Initiative for Early Childhood Intervention*).

The KiD 0–3 national main study was carefully piloted and embedded in a series of studies. First, in 2013 and 2014 a pilot study was conducted with a sample of N = 6000 caregivers of infants and toddlers in two large German cities aiming to test the risk inventory and two different types of sampling for empirically based design decisions (Eickhorst et al., 2015). Families were recruited either via phone and mail based on register addresses (city 1) or at well-child visits in pediatricians' practices (city 2). Ethical approval for the pilot study was granted by the General Medical Council in the North-Rhine region (No 2013247). Second, a subsample of the pilot study (N = 197) was investigated during a home-visiting study in 2014 and 2015 (KiD 0–3 in-depth study; Eickhorst et al., 2016). Observations of primary caregiver and target child as well as in-depth risk assessments for both caregivers (mother and father) were conducted longitudinally. A further component of the in-depth study was testing the instrumentation for gathering parent reports of child maltreatment (Liel, 2018). Third, the KiD 0–3 national main study was conducted in 2015 (N = 8.063), and is described in more detail below. Fourth, all families who participated in the main study and agreed to further participation were asked to provide follow-up data using a postal survey on child health, parenting and child development in 2017 (Follow-Up, N = 804). Both caregivers were included in the Follow-Up study.

2.1. Sample

The basic population for the national main study included all families with children aged 0–3 years in Germany. Based on findings from a pilot study (Eickhorst et al., 2015), sampling was carried out through pediatricians' practices to increase participation rates and representativeness of the sample. Families who visited a pediatrician for one of the routine child development examinations U3 (age 4–5 weeks) to U7a (age 34–36 months) during April to September 2015 were invited to answer a written questionnaire. These examinations are taken up for the majority of children (U3–U7: at least 99.0 %, lowest participation rate for U7a: 92.6 %; Schmidke, Kuntz, Starker, & Lampert, 2018) and covered by statutory health insurance. Of 10,754 caregivers who were invited to participate in the study 8063 completed the KiD 0–3 risk inventory. This corresponds to a response rate of 75.0 %, which is very high for population-based surveys. The KiD 0–3 questionnaire was available in six languages (German, English, Russian, Turkish, Polish and Rumanian). The English version is part of the electronic supplement (Appendix 1).

Comparing the KiD 0–3 main study sample with German Census data (2013) evidences high sample representativeness, e.g. regarding the rate of immigrants and welfare receipt (Table 1). There is a minor bias favoring higher education, which is a well-known problem in population surveys. Furthermore, single parents are slightly underrepresented. The mean age of children was about 14.35 months, indicating a skew favoring younger age. Since most well-child visits are located in the first year of children's lives, younger children are overrepresented.

Based on findings of the pilot study, we chose an innovative sampling approach to collecting data from parents with infants and toddlers via pediatricians' practices instead of register-based addresses. As evidenced by the KiD 0–3 pilot study, access via

Table 1
Description of the KiD 0–3 sample compared with German Census.

	KiD 0–3 main study (unweighted)	German Census (2013)
	%	%
Sample 0–47 month (*N*)	(7620)	(41,050)
Respondent		
Mother	90.88	28.09
Father	7.16	24.34
Other[a]	1.96	47.57
Age		
Mother (in years) [*M* (*CI*)]	[31.64 (31.52 – 31.76)]	[32.77 (32.65 – 32.88)]
Father (in years) [*M* (*CI*)]	[35.00 (34.43 – 35.57)]	[36.22 (36.09 – 36.36)]
Target child (in months) [*M* (*CI*)]	[14.35 (14.07 – 14.63)]	n.a.
Educational level (household)[b]		
ISCED low	6.70	16.75
ISCED medium	39.04	52.21
ISCED high	54.26	31.04
Migration history (household)	36.61	36.61
Single parent household	7.20	11.55
Social welfare receipt	17.06	13.17

Notes. [a] KiD 0–3: both parents, [b] Highest educated parent according to International Standard Classification of Education (ISCED): low = maximum secondary school leaving certificate but no vocational training degree (yet), medium = completed apprenticeship, vocational degree or high school diploma, high = master/technician degree or university degree.

pediatricians' practices allowed to better include burdened families than traditional forms of sampling.

To collect data for a representative sample, a two-step cluster sampling of pediatric practices was conducted: First, a sample of 1500 practitioners was chosen randomly from Germany's full register of pediatricians that had been stratified according to federal state and further characteristics (e.g. number of practices and joint practices per community size). Second, 1872 practices in underrepresented regions were recruited from the official register. The practices were invited in writing to serve as KiD 0–3 study centers. The response rate was 66.9 % to our invitation. A total of 271 practices served as study centers for KiD 0–3. The practitioners were trained and documented their progress.

2.2. Data collection

In the 271 study centers, pediatricians and their staff distributed the KiD 0–3 written questionnaires to parents who came to the well-child visits and asked them to answer the questions in the waiting area. Staff documented the progress of study participation and reasons for non-participation. Parental oral consent according to the Helsinki Declaration (WMA General Assembly, 1964) was requested. The practitioners received financial incentives (€30 per returned questionnaire and a total of €150 for documenting all non-responding families). Data collection from 13th of April to 16th of September 2015 was organized by the market research company Kantar Health Germany. Parents posted the completed questionnaires in a sealed box located in the practice waiting area.

2.3. Measures

The 23-page self-report questionnaire included sociodemographic data, a risk inventory with risk factors related to child, parent, family and parent-child interaction, measures of child maltreatment as well as knowledge and use of health, child welfare and early intervention services. Risk factors were identified based on meta-analyses of predictors for child maltreatment (Kindler, 2010; Parrish, Young, Perham-Hester, & Gessner, 2011; Sidebotham & Heron, 2006; Stith et al., 2009). Measures referring to these risk factors were taken from research studies or were adapted from validated questionnaires (Table 2). Internal consistency of measures ascertained with Cronbach's α (Peterson, 1994) was acceptable to good considering that most measures consisted of 2–4 items only.

The key measures concerning the outcomes child abuse, neglect and exposure to IPV since birth were adapted from the Juvenile Victimization Questionnaire (Finkelhor, Hamby, Ormrod, & Turner, 2005) and have been successfully used in the British National Survey of Child Safety and Victimization (Radford et al., 2011). Child abuse was measured by the questions "Has your child ever been physically hurt by an adult (e.g. hit, beaten or kicked)?" and/or "Has your child ever been shaken violently or been pushed against a wall or a piece of furniture by an adult?" Child neglect was measured by the question "Were there ever any instances where an adult neglected your child (e.g. the child did not get enough to eat or has been left alone for prolonged periods of time)?" IPV was measured by the introduction "Since your child has been born" and the questions "Has a parent of your child ever seriously threatened to hurt the other parent?" and/or "Has a parent of your child ever been physically hurt by the other parent (e.g. beaten, slapped, choked or kicked)?" The item responses were measured dichotomously (yes/no) as well as the variables were summarized dichotomously (any/no report). It was decided to assess information about violence at the household level without further information about the perpetrator to avoid drop-out and issues of data protection.

Table 2
Outcome variables, risk factors and use of services in the KID 0–3 study (N = 7620).

Variables	Items	α	Measures [taken/adapted from]	N
Child maltreatment				
Child abuse[a]	2		Shaking or physical injury caused by violence [JVQ (Finkelhor, Hamby, Ormrod, & Turner, 2005)]	7420
Child neglect[a]	1		Physical neglect and lack of supervision [JVQ (Finkelhor, Hamby, Ormrod, & Turner, 2005)]	7420
Child exposure to IPV[a]	2		Serious threat or physical assault between parents [JVQ (Finkelhor, Hamby, Ormrod, & Turner, 2005)]	7408
Proximal risk factors				
Child characteristics				
Child's socioemotional behavior problems	6	.76	Perceived negative temperament of the child [SGKS (Kübber, 2014)]	7101
Child's crying dysregulation	3	.80	Crying dysregulation [Wessel's rule]	7499
Parent characteristics				
Parenting stress	4	.80	Stress as result of low parental competence [German PSI (Töster, 2010)]	7443
Negative attribution of child behavior	1		Parental perception that child sometimes just screams to annoy [EMKK (Engfer, 1984)]	7427
Harsh punishment	1		Parent grips child harder than felt appropriate [EMKK (Engfer, 1984)]	6450
Anger	2	.72	Feelings angry inside or things that bother [CAPI (Milner, 1986)]	7355
Overall Stress	4	.69	Feelings of being unable to control everyday situations [PSS 4 (Cohen, Kamarck, & Mermelstein, 1983)]	7203
Depression/Anxiety	4	.80	Depressed or down and/or nervous, anxious and worrying [PHQ 4 [Löwe et al., 2010)]	7335
Drug or alcohol abuse	2	.57	Failure to meet social obligations or treatment for alcohol/drug abuse in the past year [PHQ (Spitzer, Kroenke, Williams, & PHQ Primary Care Study Group, 1999); FFCWS (Reichman, Teitler, Garfinkel, & McLanahan, 2001)]	7330
Criminal violence ever	1		Get criminal report on any violent act in the past [RiP (Liel, 2017)]	7409
Family characteristics				
Couple distress[b]	4	.76	Dissatisfied/unhappy in partnership [DAS 4 (Sabourin, Valois, & Lussier, 2005)]	7135
Low co-parenting[b]	1		Disagreement with other parent over child's upbringing, care or supervision [pairfam, (Thönnissen et al., 2017) AiD:A (German Youth Institute, 2013)]	7311
Frequent quarrels[b]	1		Often severe argument with partner [KINDEX (Schauer & Ruf-Leuschner, 2013)]	7300
IPV in any partnership	1		Experience of violence in any relationship [KINDEX (Schauer & Ruf-Leuschner, 2013)]	7410
Distal risk factors				
Child characteristics				
Sex of child	1		Sex of child (direct questioning)	7525
Disability or a serious illness	1		Child has a disability or a serious illness (direct questioning)	7542
Preterm birth and/or low birth weight	2		Birth before 32nd week of pregnancy or birthweight 2800 g or lower (direct questioning)	7523
Unplanned pregnancy	1		Pregnancy was unplanned (direct questioning)	7576
Parent characteristics				
Mother younger than 22	1		Mother 22 years or younger when child was born	7392
Single parent and/or with new partner	5		Mother not living together with biological father (non-nuclear family), single parent and/or having a new partner	7227
No social support	2	.64	Persons available to be involved in child care or to give advice on parenting problems [pairfam (Thönnissen et al., 2017)	7378
Adverse childhood experiences	3	.78	History of maltreatment in parent's childhood [EMKK (Engfer, 1984)]	7349
Family characteristics				
Social welfare receipt	1		Financial support for at least one family member in the last 12 months	6989
Cramped living conditions	2		Equivalent weighted household size per household members [as Jansen et al. (2001)]	6869
Educational level (household)	4		Highest education of respondent or partner [ISCED (UNESCO Institute for Statistics, 2012)]	7375
Migration history (household)	2		Migration background of respondent or partner [according to §6 of the German MighEV act]	7411
Early intervention services				
No pregnancy check-ups	1		Regular use of pregnancy check-ups (covered by statutory health insurance)	7368
No universal prevention program	3		Prenatal classes, medical services after childbirth, midwife assisting for first 8 weeks (covered by statutory health insurance)	7159
Use of selective prevention program	4		Early intervention programs targeted to families at risk, advice for families with additional needs, child guidance center	6985
Contact to child welfare services	1		Family preservation programs offered by child protection/child welfare service	6996

Notes. All variables were dichotomized (except educational level), [a] Since child was born, [b] Only if there is an existing partnership.

All variables included in the KiD 0–3 inventory are listed in Table 2. To simplify interpretation, we divided risk factors into rather proximal or distal factors. This is only a rough classification and some variables could be assigned to both categories (e.g. adverse childhood experiences). All risk factors were dichotomized in order to include a large variety of variables and to enable comparability with other studies (Doidge et al., 2017; Parrish et al., 2011; Sidebotham & Heron, 2006). Additionally, child age (in months) was included to control for age as a likely factor in lifetime prevalence. Highest parental education in the household was divided into low, medium and high levels as a proxy variable for socioeconomic status. If the respondent was a lone parent, variables concerning partnership were categorized "inadmissible" (additional to yes/no) in order to include all parents in the analyses. The use of early

intervention was measured for each program type and summarized into universal and targeted prevention, which is a rough, but common classification.

2.4. Data preparation

After plausibility checks and data cleaning, we excluded data from children with no date of birth to make sure that we only analyzed data from babies and toddlers. We also excluded data from respondents other than mothers or fathers (e.g. grandparents or foster families) as reported child maltreatment possibly occurred in another family context. Finally, 7620 families with children aged 0–47 months who visited the pediatric child development reviews were included.

We used a combination weighting design consisting of weights derived from the population distribution in the German federal states and a post-stratification weighting with 191 groups. These groups, referenced to the German population, were based on the German census and stratified by migration history, level of education, occupation, and household size. If not stated otherwise, reported data is weighted.

We report here on the full sample with children, but for our multivariate analysis, we excluded missing data listwise in the regression models in line with current recommendations for large and representative samples (Cheema, 2014).

We had a set of around 60 possible risk factors, including conflicting definitions as well as various options to group or dichotomize the variables. We examined them descriptively (frequencies by χ^2 and effect sizes by φ) and evaluated them by the positive likelihood test for the relation of sensitivity and specificity (Weiß, 2010). Furthermore, we carried out bivariate point tetrachoric correlations to identify high intercorrelating risk factors (Appendix 2). This examination of the data sought to identify core risk factors for the multivariate analysis in this study.

2.5. Data analysis

First, we additionally calculated bivariate odds ratios and confidence intervals for the evaluated risk factors affecting the outcomes child abuse, neglect or exposure to IPV separately. In order to avoid multicollinearity, we took the level of significance into account for model testing. Finally, chose only significant risk factors ($p < 0.05$) for inclusion in the following regression models.

Second, we conducted three logistic regressions, one each for child abuse, neglect and exposure to IPV. Since we had many independent variables and few positive reports of family violence, the models tended to be overfitted (Pavlou et al., 2015, 1–3). There were no theoretical reasons to exclude variables because all observed risk factors were based on the ecological framework (Belsky, 1993; Bronfenbrenner, 1977) and have yielded evidence in other studies. In order to narrow down our pre-selection of risk factors, we used an automatic variable selection for regression models in an explanatory way. We started with the full model and then subsequently deleted the variables that reduced the model fit based on the Akaike Information Criterion (AIC). We did the same using forward and backward selection of risk factors based on their *p*-value ($p < 0.15$)) (Ambler, Seaman, & Omar, 2012, p. 1159; Bursac, Gauss, Williams, & Hosmer, 2008, 5 f.; Pavlou et al., 2015, 3) until there was no further improvement of the model fit (Lindsey & Sheather, 2010). We compared alternative models and identified potential omitted variables and interaction terms. We excluded harsh punishment as risk factor for child abuse and omitted frequent quarrels in the regression model for IPV to avoid conceptual overlap in the risk factors and outcomes. In the analysis of child neglect, we excluded the lifetime prevalence of criminal violence as well as child's crying dysregulation because of empty cells, but we added migration history because it was an omitted variable that explained cramped living conditions. According to the research literature that discusses an overlap of child maltreatment and exposure to IPV (Appel & Holden, 1998; Hamby et al., 2010), IPV can be considered a risk factor for child abuse as well as a distinct form of child maltreatment (Sidebotham & Heron, 2006; Stith et al., 2009). Thus, we included IPV as a risk factor in the logistic regression models for child abuse or neglect and we also analyzed IPV in the third regression model as an outcome. Due to the low frequency, we did not analyze models examining the co-occurrence of both, exposure to IPV and abuse (n = 31) or exposure to IPV and neglect (n = 16). We included cases with overlapping reports because results did not differ if these cases were excluded.

Third, we extended the regression models in a second step by including parental use of pregnancy check-ups, universal prevention or selective intervention programs and parental contact to child welfare services. The rationale for this exploratory analytical step was to find out whether parental service use could explain child maltreatment in any additional way to the risk factors included in the regression models. Similar to the risk factors, we only included programs and services that were bivariate associated with child abuse, neglect or exposure to IPV.

Fourth, logistic regression diagnosis included the analysis of data outliers with Cook's distance, (multi-)collinearity analysis with Variance-Inflation-Factor (VIF) and deeper analysis of the model fit with Stata's linktest-option (UCLA: Statistical Consulting Group) and F-adjusted Hosmer–Lemeshow chi-square test for model goodness-of-fit (Archer & Lemeshow, 2006).

All data analysis was carried out with Stata, Version 11.0 (StataCorp, 2017), and R software, version 3.5.1 (R Foundation for Statistical Computing, 2017), via the Stata ADO-File Resource (Newson, 2007, revised 2016).

3. Results

3.1. Prevalence rates

The final KiD 0–3 national main study sample included data from 7620 respondents: 6875 mothers, 542 fathers and 148 couples comprising two caregivers responded to the survey. In 55 cases, it was not clear whether mother or father was the respondent. Of

Table 3
Bivariate risk factors for child abuse, neglect and exposure to IPV.

	Child abuse				Child neglect				Child exposure to IPV			
	OR	*loCI*	*upCI*	*N*	*OR*	*loCI*	*upCI*	*N*	*OR*	*loCI*	*upCI*	*N*
Child maltreatment												
Child abuse					19.94***	10.49	37.92	7405	12.65***	7.95	20.14	7396
Child neglect	19.94***	10.49	37.92	7405					13.32***	6.52	27.19	7396
Child exposure to IPV	12.65***	7.95	20.14	7396	13.32***	6.52	27.19	7396				
Proximal risk factors												
Child characteristics												
Child's socioemotional behavior problems	6.42***	3.94	10.45	6966	7.29***	3.46	15.37	6972	5.08***	3.17	8.15	6962
Child's crying dysregulation	2.48^{+}	0.97	6.36	7324	5.92***	2.38	14.73	7324	2.95**	1.46	5.96	7314
Parent characteristics												
Parenting stress	4.37***	2.89	6.60	7306	3.00***	1.66	5.42	7308	2.53***	1.86	3.44	7298
Negative attribution of child behavior	5.85***	3.98	8.57	7381	5.79***	3.09	10.83	7381	3.42***	2.37	4.93	7371
Harsh punishment	14.12***	8.96	22.25	6415	4.45***	2.42	8.20	6416	4.42***	3.05	6.40	6405
Anger	4.83***	3.28	7.12	7320	4.36***	2.34	8.13	7320	4.56***	3.27	6.35	7312
Overall Stress	2.72***	1.83	4.04	7107	4.42***	2.65	7.39	7111	3.51***	2.55	4.84	7100
Depression/Anxiety	3.43***	1.91	6.14	7237	9.86***	5.45	17.84	7239	7.82***	5.29	11.58	7230
Drug or alcohol abuse	5.42***	2.81	10.47	7234	8.03***	2.99	21.59	7232	14.46***	9.10	22.96	7226
Criminal violence ever	6.04***	3.36	10.85	7396	7.95***	3.96	15.95	7394	14.63***	9.90	21.62	7390
Family characteristics												
Couple distress	3.27***	2.13	5.01	7040	5.80***	3.04	11.08	7039	10.25***	7.09	14.81	7033
Low co-parenting	2.62***	1.58	4.33	7207	4.41***	2.37	8.20	7207	7.98***	5.65	11.27	7201
Frequent quarrels	4.10***	2.63	6.40	7196	2.63**	1.29	5.39	7196	11.98***	8.22	17.46	7189
IPV in any partnership	4.39***	2.86	6.74	7397	8.61***	4.96	14.96	7395	25.16***	18.54	34.14	7390
Distal risk factors												
Child characteristics												
Sex of child	1.03	0.73	1.44	7327	1.00	0.54	1.84	7326	0.84	0.60	1.17	7315
Child's disability or a serious illness	2.73*	1.01	7.36	7358	0.99	0.13	7.39	7358	1.67	0.63	4.48	7346
Preterm birth and/or low birth weight	1.02	0.56	1.84	7338	2.57**	1.39	4.74	7340	1.81*	1.11	2.94	7328
Unplanned pregnancy	1.69*	1.13	2.51	7384	2.53**	1.39	4.62	7384	4.56***	3.38	6.16	7373
Parent characteristics												
Young mother	1.72^{+}	0.92	3.23	7287	6.37***	3.20	12.69	7289	3.84***	2.66	5.53	7280
Single parent and/or with new partner	2.04**	1.22	3.42	7051	5.71***	3.17	10.26	7047	10.48***	7.15	15.37	7038
No social support	1.10	0.72	1.69	7342	2.29**	1.29	4.09	7344	1.85***	1.34	2.56	7334
Adverse childhood experiences: physical violence	3.16***	2.10	4.77	7249	4.41***	2.51	7.75	7250	4.59***	3.4	6.21	7242
Family characteristics												
Social welfare receipt	1.65*	1.07	2.56	6894	6.55***	3.56	12.06	6895	6.74***	4.75	9.56	6887
Cramped living conditions	0.75	0.35	1.61	6784	3.39***	1.84	6.26	6787	1.44	0.87	2.39	6779
Education level: low vs. middle/high	1.27	0.66	2.46	7273	3.83***	1.94	7.54	7275	2.97***	1.88	4.69	7267
Migration history in household	1.23	0.84	1.81	7295	2.48**	1.36	4.53	7296	2.14***	1.54	2.96	7287
Early intervention services												
No pregnancy check-ups	3.18**	1.50	6.74	7268	5.51***	2.47	12.28	7267	3.47***	1.85	6.48	7262
No use of universal prevention program	0.86	0.44	1.69	7067	1.96 +	0.90	4.27	7069	2.33***	1.56	3.48	7063
Use of selective prevention program	3.25***	2.20	4.81	6899	2.91***	1.62	5.25	6901	2.54***	1.79	3.62	6896
Contact to child welfare services	4.03***	2.37	6.83	6904	7.41***	3.9	14.05	6905	5.91***	4.03	8.67	6898

Notes. Data is weighted, Odds ratio (*OR*) from bivariate logistic regression with lower 95 % Confidence Interval (*lowCI*), upper 95 % Confidence Interval (*upCI*) and number of participants (*N*) of risk factors for child abuse, neglect and exposure to IPV, Significance levels: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, $^{+}p < 0.1$.

these, 4.92 % reported any form of child maltreatment. The frequencies were 1.91 % for child abuse, 0.83 % for child neglect and 2.98 % for child exposure to IPV (age-related frequencies in Appendix 3).

3.2. Univariate risk factors

Odds ratios from bivariate logistic regressions of all included variables are shown in Table 3. As expected, the associations between the risk factors and the different types of child maltreatment are strong given the size of the odds ratios. Most of the risk factors are strongly associated as well as theoretically plausible risk factors. The strongest risk factor for child abuse is harsh punishment followed by risk factors related to parent-child interaction. For child neglect, several risk factors, including depression/anxiety, drug or alcohol abuse or any experience of IPV, were the risk factors with the highest odds ratios. However, drug or alcohol abuse has very large confidence intervals, possibly due to measurement uncertainty because of low prevalence of child neglect. For child exposure to IPV, there are several risk factors with high odds ratios and small confidence intervals, leading to a high number of significant risk factors in our study. The strongest risk factors were those related to any form of violence and substance abuse. When

Table 4
Full regression model for child abuse.

Child abuse	Model 1			Model 2		
N = 6268	*OR*	*lowCI*	*upCI*	*OR*	*lowCI*	*upCI*
Age of child	1.08***	1.06	1.10	1.07***	1.05	1.10
Child exposure to IPV	4.63***	2.47	8.68	4.21***	2.25	7.88
Anger	166^{+}	0.92	2.97	1.68^{+}	0.94	3.01
Depression/Anxiety	0.56	0.23	1.34	0.62	0.26	1.49
Parenting stress	2.79***	1.59	4.90	2.60**	1.48	4.56
Negative attribution of child's behavior	1.66^{+}	0.95	2.90	1.69^{+}	0.97	2.95
Adverse childhood experiences	1.14	0.67	1.95	1.02	0.60	1.73
No pregnancy check-ups				0.26	0.04	1.75
Use of selective prevention program				2.08**	1.29	3.36
Contact to child welfare services				1.12	0.49	2.56
	R^2 weighted = 0.19 Hatsq = 0.375 R^2 unweighted = 0.21			R^2 weighted = 0.20 Hatsq = 0.413 R^2 unweighted = 0.21		

Notes. Data is weighted by complete case analysis, Odds Ratios (*OR*) with 95 % Confidence Intervals (*lowCI* to *upCI*), Significance levels: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, $^{+}p < 0.1$.

looking at service use, child maltreatment in general is associated with incomplete pregnancy check-ups. However, higher rates of using selective prevention programs or being in contact with child welfare services are significant for families with reports of child abuse and exposure to IPV.

3.3. Regression models

Two-step regression models for child abuse, child neglect and child exposure to IPV are presented in separate tables (Tables 4–6). First, the analysis of factors for each outcome is shown. Second, voluntary family use of prevention programs or child welfare services is included. At first glance, the regression models reflect the results from the bivariate analysis such that the strongest and highest number of risk factors were associated with IPV compared to child abuse or neglect. In all three models, child's age turned out to be a significant factor, which is plausible because the likelihood of the outcomes studied increases as the observation period increases.

For child abuse (Table 4), only proximal risk factors were found to be significantly associated: child exposure to IPV and parenting stress as well as anger and negative attributions of child's behavior, which both failed to meet our significance criteria. For child neglect and child exposure to IPV, proximal as well as distal risk factors were found. Depression/anxiety, couple distress, adverse childhood experiences, young mother and migration history were found to be associated with both outcomes, cramped living conditions were associated with child neglect only (Table 5) and social welfare receipt with IPV only (Table 6). For child exposure to IPV, harsh punishment was a significant risk factors, which might hint at the co-occurrence of IPV and child abuse.

Table 5
Full regression model for child neglect.

Child Neglect	Model 1			Model 2		
N = 5593	*OR*	*lowCI*	*upCI*	*OR*	*lowCI*	*upCI*
Age of child	1.03*	1.00	1.05	1.02^{+}	1.00	1.05
Child exposure to IPV	2.30^{+}	0.89	5.93	1.88	0.73	4.87
Child's negative temper	1.81	0.56	5.88	1.69	0.49	5.88
Depression/Anxiety	2.63*	1.05	6.58	2.61^{+}	0.99	6.88
Couple distress	2.91*	1.27	6.71	2.71*	1.14	6.47
Inadmissible (no partnership)	3.00*	1.04	8.70	2.68^{+}	0.89	8.08
Young mother	2.66*	1.10	6.43	2.77*	1.20	6.38
Adverse childhood experiences	2.08*	1.03	4.21	1.83	0.89	3.78
Cramped living conditions	3.84**	1.77	8.30	3.84**	1.77	8.34
Migration history (household)	2.14*	1.08	4.25	2.25*	1.14	4.45
No pregnancy check-ups				1.11	0.32	3.90
Use of selective prevention program				1.79	0.85	3.77
Contact to child welfare services				1.75	0.59	5.19
	R^2 weighted = 0.22 hatsq = 0.480 R^2 unweighted = 0.21			R^2 weighted = 0.23 hatsq = 0.518 R^2 unweighted = 0.22		

Notes. Data is weighted by complete case analysis, Odds Ratios (*OR*) with 95 % Confidence Intervals (*lowCI* to *upCI*), Significance levels: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, $^{+}p < 0.1$.

Table 6
Full regression model for child exposure to IPV.

Child exposure to IPV	Model 1			Model 2		
N = 5040	*OR*	*lowCI*	*upCI*	*OR*	*lowCI*	*upCI*
Age of child	1.02**	1.01	1.04	1.02**	1.01	1.04
Harsh punishment	2.09**	1.27	3.44	2.03**	1.24	3.33
Depression/Anxiety	3.64***	2.20	6.01	3.32***	2.04	5.42
Couple distress	6.20***	3.81	10.09	6.14***	3.76	10.02
Inadmissible (no partnership)	7.23***	3.92	13.32	6.04***	3.31	11.00
Unplanned pregnancy	1.37	0.88	2.13	1.27	0.80	2.00
Young mother	2.07*	1.18	3.62	2.25**	1.31	3.87
Adverse childhood experiences	2.44***	1.63	3.67	2.23***	1.46	3.40
Social welfare receipt	2.75***	1.72	4.40	2.57***	1.61	4.10
Migration history (household)	2.02**	1.32	3.09	2.17**	1.37	3.44
No pregnancy check-ups				1.80	0.73	4.46
No universal prevention program				1.03	0.58	1.84
Use of selective prevention program				2.02**	1.25	3.25
Contact to child welfare services				1.72	0.96	3.08
	R^2 weighted = 0.30 hatsq = 0.231 R^2 unweighted = 0.29			R^2 weighted = 0.31 hatsq = 0.349 R^2 unweighted = 0.30		

Notes. Data is weighted by complete case analysis, Odds Ratios (*OR*) with 95 % Confidence Intervals (*lowCI* to *upCI*), Significance levels: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{+}p < 0.1$.

When the use of intervention services was included the regression model (Model 2) results for child abuse and IPV remained approximately the same. If child abuse or exposure to IPV were reported, parental participation in a selective prevention program was twice as frequent as in families without indications of physical abuse or IPV. For child neglect, caregiver depression/anxiety and adverse childhood experiences lowered the odds ratios in Model 2 when intervention services were included, however, no significant association with intervention services was found.

3.4. Model fit and specification

In the regression model for child abuse, we deleted 26 observations which were all types of outlier with leverage values higher than three times the mean leverage and standardized residual values over the general recommendation of the value 2. After that we did not detect any specification error (UCLA: Statistical Consulting Group). The regression models for child abuse and neglect turned out to have a good model fit in the unweighted data. For weighted data, the model fit was influenced by omitting all three variables concerning use of early intervention and child welfare services based on Stata's linktest.

4. Discussion

4.1. Study design and key findings

By using an innovative sampling strategy, the KiD 0–3 national main study is the first population survey that has collected prevalence rates of different forms of child maltreatment in early childhood in Germany. The study was the first in Germany to examine children's exposure to IPV. Given the research gap in epidemiological studies on child maltreatment in Continental Europe, self-report data is an important source of information additional to administrative data. Taking an age effect into account, in the light of existing self-report studies the prevalence rates for child abuse and exposure to IPV found in KiD 0–3 seems to be plausible, but the frequency of child neglect might have been underestimated due to its measurement. We did not find any evidence in our data that the questions on child maltreatment produced higher rates of missing values or showed any other abnormalities compared to other measures included in the KiD 0–3 risk inventory. The KiD 0–3 study design proved successful. This success suggests appropriate interventions for pediatricians to support families at-risk for child maltreatment (e.g. the Safe Environment for Every Kid Model; Dubowitz, 2014).

A key advantage of the KiD 0–3 study design is that it gave us the opportunity to examine associations of risk factors with different forms of child maltreatment. The empirical-based confirmation of risk factor associations indicates that most of those measured in the study are relevant for the German population of young parents. These results are in line with other research (Doidge et al., 2017; Lo et al., 2017; Stith et al., 2009). We found that child abuse is associated especially with proximal factors such as parental perceptions of child's socioemotional behavior, criminal violence or drug/alcohol abuse, whereas child neglect and exposure to IPV are associated with both distal and proximal risk factors such as depression/anxiety, criminal violence or drug/alcohol abuse, single parent or social welfare receipt. These patterns continue in the multivariate analysis, where only proximal risk factors were found relevant for child abuse and proximal as well as distal ones were relevant for child neglect or IPV. Failing to attend regular pregnancy check-ups,

participating in selective prevention programs or participating in any family preservation offers provided by child welfare services were related to all three forms of child maltreatment. For child abuse and exposure to IPV, the use of selective prevention was associated with greater risk in the multivariate regression models.

4.2. Limitations

Results of the KiD 0–3 main study should be regarded in the light of its limitations. First, it contains cross-sectional data, so associations can be identified, but without any clear causal direction. Second, in self-administered questionnaires, especially involving sensitive information, respondents may underreport or provide socially desirable responses. Third, parent-child interaction is a key area where risk factors may be observed, but it was under-measured by the risk factors included because this domain is difficult to assess in a valid fashion using parental self-report instruments. Fourth, under-measured as well was a societal dimension of risk factors, which may enhance risk by social disadvantaging living conditions. Fifth, for the most part, we questioned one caregiver, whereas in many families other caregivers may influence risk to children. Sixth, there are different ways to pre-select the risk factors for child maltreatment. By carefully considering a range of variables that might constitute risk factors, we tried to ensure a transparent process that led us to prioritize appropriate explanatory variables. Seventh, some key information might have been lost by dichotomizing risk factors for the analysis. However, the dichotomization of variables made it easier to compare results with a range of studies that also used binary risk factors (e.g. Dodge, 2005; Sidebotham & Heron, 2006). Finally, prevalence of all three forms of maltreatment is small relative to the overall sample. Nevertheless, the KiD 0–3 main study represents current reported population-level prevalence rates among this age group for Germany.

From this analysis of the KiD 0–3 data, we are able to confirm the relevance of key risk factors found in the literature from other settings outside of Germany (Stith et al., 2009). However, we add some new findings to the research on early childhood discussed below.

4.3. Explanation of child abuse

The strong association between child abuse and harsh punishment confirms the overlapping content of both variables which might be a multi-collinear effect (Gershoff & Grogan-Kaylor, 2016). Consequently, harsh punishment was excluded from the multivariate analysis. All risk factors found in the logistic regression model (child exposure to IPV, parenting stress, anger and negative attributions of child's behavior) reflect negative parental emotionality.

In the existing literature, IPV is an acknowledged but less well-examined predictor for child abuse. For example, Stith et al. (2009) report medium effect sizes for spousal violence on child physical abuse in a small database of five studies covering n = 773 families. There are only two population-based studies on babies and toddlers available (Sidebotham & Heron, 2006; Windham et al., 2004). IPV, whether as a victim or perpetrator, was found to be associated with self-reported child abuse in the child's first three years among mothers participating in an early intervention program (Windham et al., 2004). Associations between IPV and the occurrence of investigations and registrations by child protection services up until age six were found in the ALSPAC study as well (Sidebotham & Heron, 2006). In contrast to previous studies, in KiD 0–3 we found that children's exposure to IPV had by far the strongest association with child abuse.

Parenting stress as second key risk factor found in KiD 0–3 might be more relevant in early childhood than at later child ages. Stith et al. (2009) measured a small effect size for parenting stress in childhood overall. However, parenting stress among mothers of infants was predictive for spanking the child independent of parent ethnicity in the Fragile Families and Child Wellbeing study (Mackenzie, Nicklas, Brooks-Gunn, & Waldfogel, 2011). Interestingly, internationally well-established risk factors such as negative attributions of child's behavior or anger (Stith et al., 2009) were found in the KiD 0–3 study as well, whereas maternal depression, substance abuse or violent delinquency were not salient in the regression models.

4.4. Explanation of child neglect

This study's results on child neglect are especially weak due to low prevalence. However, we added a broad range of proximal and distal risk factors for neglect at age 0–3 to existing research such as drug/alcohol consumption, criminal violence and cramped living conditions. For early childhood, the relevance of depression and cramped living conditions has previously been established (Chaffin, Kelleher, & Hollenberg, 1996; Clement, Berube, & Chamberland, 2016; Slack et al., 2011). Risk factors evaluated in the regression model were based on previous research on child neglect (Brown, Cohen, Johnson, & Salzinger, 1998). Child exposure to IPV was not associated with neglect as in previous studies.

4.5. Explanation of child exposure to IPV

The contribution of the KiD 0–3 study is that we examined child exposure to IPV in the context of child maltreatment in early childhood as recommended by Sidebotham and Heron (2006). To the best of our knowledge, only one Australian cohort study is available that analyzed witnessing IPV from children's retrospective point of view (Doidge et al., 2017). Due to a lack of further studies, the German KiD 0–3 main study adds the perspective of Continental Europe to the international research on child maltreatment. The ALSPAC cohort study found that IPV and child maltreatment depend on similar characteristics of family structure. Sidebotham and Heron (2006) recommend that IPV be examined as a distinct adverse outcome consistent with the analysis presented

here.

Child exposure to IPV has the highest prevalence rate of all forms of child maltreatment analyzed in the KiD 0–3 study. Further, the regression model for child exposure to IPV was the most stable model with the broadest range of risk factors we evaluated. In addition, our results show that risk factors for IPV differ from those for abuse and neglect. The high odds ratio for the association between child exposure to IPV and child abuse indicate that a number of risk factors explain both outcomes. Thus, our findings suggest the importance of analyzing IPV as a mediator for child abuse in future causal modeling studies.

Harsh parenting, for instance, was a significant risk factor for child exposure to IPV in our models. The relationship is difficult to disentangle and might be a cause as well as a result of its co-occurrence with IPV. The result suggests that both might be considered under the unifying concept of family violence, which empathizes the different transmission pathways that might cause negative child outcomes (Liel, 2018). KiD 0–3 confirmed the strong association between couple distress and spousal violence, which is well known independent of being victim or perpetrator of IPV (Stith, Green, Smith, & Ward, 2008). Further, other risk factors or predictors for IPV found in the literature such as depression/anxiety, adverse childhood experiences or poverty have been described in research conducted with parents of young children (Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012; Campbell, Alhusen, Draughon, Kub, & Walton-Moss, 2011; Kothari et al., 2016).

4.6. Role of selective prevention

The KiD 0–3 study makes an additional contribution to research on the role of selective prevention programs in the explanation of child maltreatment. Results show associations between parental participation and reports of child abuse and exposure to IPV. It is obvious that this association might be caused by the accumulation of risk factors, which makes it more likely that violence within families occurs as well as that targeted prevention is offered to them (Patwardhan, Hurley, Thompson, Mason, & Ringle, 2017). However, in a further analysis not reported here we refuted that hypothesis. The results remained stable when controlling for an accumulation of risk factors in the regression models for child abuse and exposure to IPV. Since this is a cross-sectional study, this association is in no way causally directed. If the presence of family violence as a precondition leads families to use selective prevention, this would support its association with these programs. As shown by Palusci (2011), family support can prolong the period between first report and reoccurrence of child maltreatment. However, there are other explanations for these associations: First, early intervention programs are offered to families at-risk and child guidance centers target families with parenting problems or parental conflict. It is possible that professionals are doing a good job in identifying and motivating those families at-risk, and that they may be successful in reducing overall risk, but not for all at-risk families. Thus, these services might be associated with the broader pool of high-risk families, some of whom will maltreat their children. Second, parental willingness to take responsibility is a protective factor for reoccurring child abuse or IPV (Liel, 2018; Stith et al., 2009). However, we did not examine parental readiness to change adverse behaviors in our study. Third, those families who are more likely to use selective prevention programs may be more willing to self-report violence within their family. Fourth, perhaps parental use of selective prevention programs is explaining variance in the KiD 0–3 data that is not captured by the risk factors studied here (e.g. families are more likely to live in disadvantaged areas).

The body of evidence indicates that early intervention programs are effective in preventing child maltreatment. In contrast to other countries, early intervention programs in Germany target a broad range of psychosocial and health-related problems in families with infants and toddlers. Since families with reported violence are participating, early intervention programs should focus on dysfunctional family relationships and negative parenting behavior as well. The difficulties in attributing causal associations to our findings regarding the effectiveness of prevention services could be addressed by conducting more systematic evaluation studies in Germany (Taubner, Wolter, & Rabung, 2015), using population-based studies.

5. Conclusion

The KiD 0–3 study provides a baseline for future research on child abuse, neglect and exposure to IPV in early childhood in Germany. Our results confirm the importance of internationally recognized risk factors for child maltreatment in Germany. We also were able to identify the importance of IPV in the German context as a more common form of maltreatment with a more complex set of indicators and a potentially important nexus of mediating risk factors. Addressing the risk factors associated with children's exposure to IPV through improvements in intervention research may also be beneficial in reducing child abuse and neglect for the 0–3 population.

Author contributions

CL and AE were involved in the overall design and management of the study and data collection. CL and SU had responsibility for conceptualizing and writing the paper. CL led the analyses. SU and SL conducted the analyses. CL, JF and SW contributed to the analyses and interpretation of findings. CL and SU wrote the manuscript with input from SL, JF and SW. All authors reviewed and approved the final version.

Declarations of interest

None.

Acknowledgments

The KiD 0–3 prevalence studies on psychosocial adversities were conducted by the National Centre for Early Prevention (NZFH) and funded by the Federal Ministry of Family Affairs, Senior Citizens, Women and Youth (BMFSFJ) as part of the Federal Initiative on Early Prevention from 2013 to 2015. The KiD 0–3 national main study was conducted by the German Youth Institute in cooperation with the Federal Centre for Health Education. The authors wish to thank the participants, involved researchers at the German Youth Institute in Munich (Dr. Christian Brand, Dr. Birgit Fullerton, Dr. Katrin Lang, Dr. Ulrike Lux, Dr. Daniela Salzmann, Johannes Scholze, Dr. Andrea Schreier, Carolin Seilbeck and Alexandra Sann) and in the Federal Centre for Health Education (Dr. Anna Neumann, Ilona Renner and Mechthild Paul), survey institute Kantar Health (Marian Schmidt and Dr. Constanze Cholmakow-Bodechtel) and for proof-reading and editing (Dr. Katherine Bird).

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.chiabu.2020.104487.

References

Ambler, G., Seaman, S., & Omar, R. Z. (2012). An evaluation of penalised survival methods for developing prognostic models with rare events. *Statistics in Medicine, 31*(11-12), 1150–1161. https://doi.org/10.1002/sim.4371.

Appel, A. E., & Holden, G. W. (1998). The co-occurrence of spouse and physical child abuse: A review and appraisal. *Journal of Family Psychology, 12*(4), 578–599. https://doi.org/10.1037/0893-3200.12.4.578.

Archer, K. J., & Lemeshow, S. (2006). Goodness-of-fit test for a logistic regression model fitted using survey sample data. *The Stata Journal, 6*(1), 97–105. https://doi.org/10.1177/1536867X0600600106.

Ashiabi, G. S., & O'Neal, K. K. (2015). Child social development in context: An examination of some propositions in Bronfenbrenner's bioecological theory. *SAGE Open, 5*(2), https://doi.org/10.1177/2158244015590840.

Begle, A. M., Dumas, J. E., & Hanson, R. F. (2010). Predicting child abuse potential: An empirical investigation of two theoretical frameworks. *Journal of Clinical Child and Adolescent Psychology, 39*(2), 208–219. https://doi.org/10.1080/15374410903532650.

Belsky, J. (1993). Etiology of child maltreatment: A developmental-ecological analysis. *Psychological Bulletin, 114*(3), 413–434.

Beydoun, H. A., Beydoun, M. A., Kaufman, J. S., Lo, B., & Zonderman, A. B. (2012). Intimate partner violence against adult women and its association with major depressive disorder, depressive symptoms and postpartum depression: A systematic review and meta-analysis. *Social Science & Medicine (1982), 75*(6), 959–975. https://doi.org/10.1016/j.socscimed.2012.04.025.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*(7), 513–531. https://doi.org/10.1037//0003-066X.32.7.513.

Brown, J., Cohen, P., Johnson, J. G., & Salzinger, S. (1998). A longitudinal analysis of risk factors for child maltreatment: Findings of a 17-year prospective Study of official recorded and self-reported child abuse and neglect. *Child Abuse & Neglect, 22*(11), 1065–1078.

Bursac, Z., Gauss, C. H., Williams, D. K., & Hosmer, D. W. (2008). Purposeful selection of variables in logistic regression. *Source Code for Biology and Medicine, 3*, 17. https://doi.org/10.1186/1751-0473-3-17.

Campbell, J. C., Alhusen, J., Draughon, J., Kub, J., & Walton-Moss, B. (2011). Vulnerability and protective factors for intimate partner violence. In J. W. White, M. P. Koss, & A. E. Kazdin (Eds.). *Violence against women and children: Mapping the terrain* (pp. 243–263). (1st ed.). Washington, DC: American Psychological Association. https://doi.org/10.1037/12307-011.

Casanueva, C. E., Cross, T. P., & Ringeisen, H. (2008). Developmental needs and individualized family service plans among infants and toddlers in the child welfare system. *Child Maltreatment, 13*(3), 245–258. https://doi.org/10.1177/1077559508318397.

Chaffin, M., Bonner, B. L., & Hill, R. F. (2001). Family preservation and family support programs: Child maltreatment outcomes across client risk levels and program types. *Child Abuse & Neglect, 25*(10), 1269–1289. https://doi.org/10.1016/S0145-2134(01)00275-7.

Chaffin, M., Kelleher, K., & Hollenberg, J. (1996). Onset of physical abuse and neglect: Psychiatric, substance abuse, and social risk factors from prospective community data. *Child Abuse & Neglect, 20*(3), 191–203. https://doi.org/10.1016/S0145-2134(95)00144-1.

Cheema, J. R. (2014). Some general guidelines for choosing missing data handling methods in educational research. *Journal of Modern Applied Statistical Methods, 13*(2), 53–75. https://doi.org/10.22237/jmasm/1414814520.

Clement, M.-E., Berube, A., & Chamberland, C. (2016). Prevalence and risk factors of child neglect in the general population. *Public Health, 138*, 86–92. https://doi.org/10.1016/j.puhe.2016.03.018.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396.

Davies, P. T., & Cummings, E. M. (2006). Interparental discord, family process, and developmental psychopathology. In D. Cicchetti, & D. J. Cohen (Vol. Eds.), *Developmental psychopathology. Risk, disorder, and adaption: Vol. 2*, (pp. 86–128). New Jersey: John Wiley & Sons.

Dixon, L., Browne, K., & Hamilton-Giachritsis, C. (2005). Risk factors of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (part I). *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 46*(1), 47–57. https://doi.org/10.1111/j.1469-7610.2004.00339.x.

Dodge, K. A. (2005). Risk and protection in the perpetration of child abuse. *North Carolina Medical Journal, 66*(5), 364–366.

Doidge, J. C., Higgins, D. J., Delfabbro, P., & Segal, L. (2017). Risk factors for child maltreatment in an Australian population-based birth cohort. *Child Abuse & Neglect, 64*, 47–60. https://doi.org/10.1016/j.chiabu.2016.12.002.

Dubowitz, H. (2014). The Safe Environment for Every Kid (SEEK) Model: Helping promote children's health, development, and safety: Seek offers a practical model for enhancing pediatric primary care. *Child Abuse & Neglect, 38*(11), 1725–1733. https://doi.org/10.1016/j.chiabu.2014.07.011.

Eickhorst, A., Brand, C., Lang, K., Liel, C., Neumann, A., Schreier, A., & Sann, A. (2015). [The KiD 0-3 study on the prevalence of psychosocial burden and early prevention in families with children aged 0-3: Study design and potential of analyses]. *Soziale Passagen, 7*(2), 381–387. https://doi.org/10.1007/s12592-015-0212-z.

Eickhorst, A., Schreier, A., Brand, C., Lang, K., Liel, C., Renner, I., & Sann, A. (2016). [Knowledge and use of different support programs in the context of early prevention in relation to family-related psychosocial burden]. *Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz, 59*(10), 1271–1280. https://doi.org/10.1007/s00103-016-2422-8.

Engfer, A. (1984). *Development of Punitive Mother-child-interactions in the Socioecological Context].* Proposal to the German Research FoundationMunich: Ludwig-Maximillians-Universität.

Epstein, M. (2001). *Perinatal predictors of early child abuse and neglect: Predicting abuse and neglect in the first two years of life from risk assessments during the prenatal and perinatal period*.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine, 14*(4), 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8.

Finkelhor, D., Hamby, S. L., Ormrod, R., & Turner, H. (2005). The Juvenile Victimization Questionnaire: Reliability, validity, and national norms. *Child Abuse & Neglect, 29*(4), 383–412. https://doi.org/10.1016/j.chiabu.2004.11.001.

Finkelhor, D., Vanderminden, J., Turner, H., Hamby, S., & Shattuck, A. (2014). Child maltreatment rates assessed in a national household survey of caregivers and youth. *Child Abuse & Neglect, 38*(9), 1421–1435. https://doi.org/10.1016/j.chiabu.2014.05.005.

German Youth Institute (2013). *Questionnaire Templates of the Aid:a Ii Study. Target Population 0 to 8 Years].* Munich.

Geffner, R. A., Jaffe, P. G., & Sudermann, M. (2000). *Children exposed to domestic violence: Current issues in research, intervention, prevention, and policy development.* New York: Haworth.

Gershoff, E. T., & Grogan-Kaylor, A. (2016). Spanking and child outcomes: Old controversies and new meta-analyses. *Journal of Family Psychology, 30*(4), 453–469. https://doi.org/10.1037/fam0000191.

Gilard-Pioc, S., Cottenet, J., Mikaeloff, Y., Gouyon, J.-B., Francois-Purssell, I., & Quantin, C. (2019). Eight-year period prevalence of physical abuse in hospitalised infants and corresponding in-hospital mortality in France. *Child Abuse Review, 28*(5), 353–365. https://doi.org/10.1002/car.2597.

Graham, A. M., Kim, H. K., & Fisher, P. A. (2012). Partner aggression in high-risk families from birth to age 3 years: Associations with harsh parenting and child maladjustment. *Journal of Family Psychology, 26*(1), 105–114. https://doi.org/10.1037/a0026722.

Hamby, S. L., Finkelhor, D., Turner, H., & Ormrod, R. (2010). The overlap of witnessing partner violence with child maltreatment and other victimizations in a nationally representative survey of youth. *Child Abuse & Neglect, 34*(10), 734–741.

Häuser, W., Schmutzer, G., Brähler, E., & Glaesmer, H. (2011). Maltreatment in childhood and adolescence: Results from a survey of a representative sample of the German population. *Deutsches Ärzteblatt International, 108*(17), 287–294. https://doi.org/10.3238/arztebl.2011.0287.

Henry, C. (2018). Exposure to domestic violence as abuse and neglect: Constructions of child maltreatment in daily practice. *Child Abuse & Neglect, 86*, 79–88. https://doi.org/10.1016/j.chiabu.2018.08.018.

Howell, K. H., Barnes, S. E., Miller, L. E., & Graham-Bermann, S. A. (2016). Developmental variations in the impact of intimate partner violence exposure during childhood. *Journal of Injury & Violence Research, 8*(1), 43–57. https://doi.org/10.5249/jivr.v8i1.663.

Iffland, B., Brähler, E., Neuner, F., Häuser, W., & Glaesmer, H. (2013). Frequency of child maltreatment in a representative sample of the German population. *BMC Public Health, 13*, 980. https://doi.org/10.1186/1471-2458-13-980.

Jansen, E., Holte, H., Jung, C., Kahmann, V., Moritz, K., Rietz, C., & Weidemann, C. (2001). *Ältere Menschen im künftigen Sicherheitssystem Straße/Fahrzeug/Mensch [Older people in the future safety system road/vehicle/human being].* Bonn.

Kindler, H. (2010). Risikoscreening als systematischer Zugang zu Frühen Hilfen. Ein gangbarer Weg? [Screening for risk of child abuse and neglect. A practicable method?]. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz, 53*(10), 1073–1079. https://doi.org/10.1007/s00103-010-1132-x.

Kotch, J. B., Browne, D. C., Ringwalt, C. L., Stewart, P. W., Ruina, E., Holt, K., & Jung, J.-W. (1995). Risk of child abuse or neglect in a cohort of low-income children. *Child Abuse & Neglect, 19*(9), 1115–1130. https://doi.org/10.1016/0145-2134(95)00072-G.

Kothari, C. L., Liepman, M. R., Shama Tareen, R., Florian, P., Charoth, R. M., Haas, S. S., & Curtis, A. (2016). Intimate partner violence associated with postpartum depression, regardless of socioeconomic status. *Maternal and Child Health Journal, 20*(6), 1237–1246. https://doi.org/10.1007/s10995-016-1925-0.

Kübber, E. (2014). *Aspekte seelischer Gesundheit im Kleinkindalter: Entwicklung und Validierung eines Screening-Instruments zur Früherkennung von Entwicklungsauffälligkeiten: [Aspects of mental health in infancy: Development and validation of a screening instrument for the early detection of developmental abnormalities].* Munich: Ludwig-Maximilians-Universität.

Lawson, J. (2019). Domestic violence as child maltreatment: Differential risks and outcomes among cases referred to child welfare agencies for domestic violence exposure. *Children and Youth Services Review, 98*, 32–41. https://doi.org/10.1016/j.childyouth.2018.12.017.

Liel, C. (2017). [Diagnostics in social work: Validation of a risk assessment screening tool for intimate partner violence to the use in perpetrator programs]. *Rechtspsychologie, 3*(1), 68–91. https://doi.org/10.5771/2365-1083-2017-1-68.

Liel, C. (2018). *Väter Und Familiäre Gewalt [fathers and Family Violence].* Munich: Ludwig-Maximilians-Universität. https://nbn-resolving.org/urn:nbn:de:bvb:19-229432.

Li, M., D'Arcy, C., & Meng, X. (2016). Maltreatment in childhood substantially increases the risk of adult depression and anxiety in prospective cohort studies: Systematic review, meta-analysis, and proportional attributable fractions. *Psychological Medicine, 46*(4), 717–730. https://doi.org/10.1017/S0033291715002743.

Lindsey, C., & Sheather, S. (2010). Variable selection in linear regression. *The Stata Journal, 10*(4), 650–669.

Lo, C. K. M., Tung, K. T. S., Chan, K. L., Yip, P. S. F., Lau, J. T. F., Wong, W. H. S., & Ip, P. (2017). Risk factors for child physical abuse and neglect among Chinese young mothers. *Child Abuse & Neglect, 67*, 193–206. https://doi.org/10.1016/j.chiabu.2017.02.031.

Löwe, B., Wahl, I., Rose, M., Spitzer, C., Glaesmer, H., Wingenfeld, K., & Brähler, E. (2010). A 4-item measure of depression and anxiety: Validation and standardization of the Patient Health Questionnaire-4 (PHQ-4) in the general population. *Journal of Affective Disorders, 122*(1-2), 86–95. https://doi.org/10.1016/j.jad.2009.06.019.

Mackenzie, M. J., Nicklas, E., Brooks-Gunn, J., & Waldfogel, J. (2011). Who spanks infants and toddlers? Evidence from the fragile families and child well-being study. *Children and Youth Services Review, 33*(8), 1364–1373. https://doi.org/10.1016/j.childyouth.2011.04.007.

Milner, J. S. (1986). *The Child Abuse Potential Inventory: Manual.* Webster, NC: Psytec Cooporation.

Newson, R. (2007). *RSOURCE: Stata module to run R from inside Stata using an R source file. Statistical Software Components S456847.* revised May 2016. Retrieved fromhttp://fmwww.bc.edu/repec/bocode/r/rsource.ado.

Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLoS Medicine, 9*(11), e1001349. https://doi.org/10.1371/journal.pmed.1001349.

O'Reilly, R., Wilkes, L., Luck, L., & Jackson, D. (2010). The efficacy of family support and family preservation services on reducing child abuse and neglect: What the literature reveals. *Journal of Child Health Care, 14*(1), 82–94. https://doi.org/10.1177/1367493509347114.

Palusci, V. J. (2011). Risk factors and services for child maltreatment among infants and young children. *Children and Youth Services Review, 33*(8), 1374–1382. https://doi.org/10.1016/j.childyouth.2011.04.025.

Parrish, J. W., Young, M. B., Perham-Hester, K. A., & Gessner, B. D. (2011). Identifying risk factors for child maltreatment in Alaska: A population-based approach. *American Journal of Preventive Medicine, 40*(6), 666–673. https://doi.org/10.1016/j.amepre.2011.02.022.

Patwardhan, I., Hurley, K. D., Thompson, R. W., Mason, W. A., & Ringle, J. L. (2017). Child maltreatment as a function of cumulative family risk: Findings from the intensive family preservation program. *Child Abuse & Neglect, 70*, 92–99. https://doi.org/10.1016/j.chiabu.2017.06.010.

Pavlou, M., Ambler, G., Seaman, S. R., Guttmann, O., Elliott, P., King, M., & Omar, R. Z. (2015). How to develop a more accurate risk prediction model when there are few events. *BMJ, 351*, h3868. https://doi.org/10.1136/bmj.h3868.

Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *Journal of Consumer Research, 21*(2), 381. https://doi.org/10.1086/209405.

R Foundation for Statistical Computing (2017). *R: A language and environment for statistical computing: 3.4.22.* Vienna. Retrieved fromhttps://r-project.org.

Radford, L., Corral, S., Bradley, C., Fisher, H., Bassett, C., Howat, N., & Collishaw, S. (2011). *Child abuse and neglect in the UK today.* London.

Reichman, N. E., Teitler, J. O., Garfinkel, I., & McLanahan, S. S. (2001). Fragile Families: sample and design. *Children and Youth Services Review, 23*(4–5), 303–326. https://doi.org/10.1016/S0190-7409(01)00141-4.

Sabourin, S., Valois, P., & Lussier, Y. (2005). Development and validation of a brief version of the dyadic adjustment scale with a nonparametric item analysis model. *Psychological Assessment, 17*(1), 15–27. https://doi.org/10.1037/1040-3590.17.1.15.

Schauer, M., & Ruf-Leuschner, M. (2013). *KINDEX: Pränatale Erfassung psychosozialer Risiken für die Entwicklung über die Lebensspanne – Der Konstanzer INDEX [Prenatal assessment of psychosocial risks for development over the life span - The Constance INDEX].* Constanz.

Schmidke, C., Kuntz, B., Starker, A., & Lampert, T. (2018). Inanspruchnahme der Früherkennungsuntersuchungen für Kinder in Deutschland – Querschnittergebnisse aus KiGGS Welle 2 [Use of child development examinations in Germany - cross-sectional results of KiGGS wave 2]. *Journal of Health Monitoring, 3*(4), 68–77.

Sidebotham, P., & Heron, J. (2006). Child maltreatment in the "children of the nineties": A cohort study of risk factors. *Child Abuse & Neglect, 30*(5), 497–522. https://doi.org/10.1016/j.chiabu.2005.11.005.

Slack, K. S., Berger, L. M., DuMont, K., Yang, M.-Y., Kim, B., Ehrhard-Dietzel, S., & Holl, J. L. (2011). Risk and protective factors for child neglect during early

childhood: A cross-study comparison. *Children and Youth Services Review, 33*(8), 1354–1363. https://doi.org/10.1016/j.childyouth.2011.04.024.
Spitzer, R. L., Kroenke, K., Williams, J. B. W., & PHQ Primary Care Study Group (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA, 282*(18), 1737–1744. https://doi.org/10.1001/jama.282.18.1737.
StataCorp, L. L. C. (2017). *Stata statistical software: Release 15.* College Station.
Stith, S. M., Green, N. M., Smith, D. B., & Ward, D. B. (2008). Marital satisfaction and marital discord as risk markers for intimate partner violence: A meta-analytic review. *Journal of Family Violence, 23*(3), 149–160. https://doi.org/10.1007/s10896-007-9137-4.
Stith, S. M., Liu, T., Davies, L. C., Boykin, E. L., Alder, M. C., Harris, J. M., & Dees, J. E. M. E. G. (2009). Risk factors in child maltreatment: A meta-analytic review of the literature. *Aggression and Violent Behavior, 14*(1), 13–29. https://doi.org/10.1016/j.avb.2006.03.006.
Stoltenborgh, M., Bakermans-Kranenburg, M. J., Alink, L. R. A., & van IJzendoorn, M. H. (2015). The prevalence of child maltreatment across the globe: Review of a series of meta-analyses. *Child Abuse Review, 24*(1), 37–50. https://doi.org/10.1002/car.2353.
Taubner, S., Wolter, S., & Rabung, S. (2015). Effectiveness of early-intervention programs in German-speaking countries – A meta-analysis. *Mental Health & Prevention, 3*(3), 69–78. https://doi.org/10.1016/j.mhp.2015.07.001.
Thönnissen, C., Wilhelm, B., Alt, P., Friedrich, S., & Walper, S. (2017). *Scales Manual of the German Family Panel (pairfam) Waves 1 to 8.* Munichhttps://www.pairfam.de/fileadmin/user_upload/redakteur/publis/Dokumentation/Manuals/Scales_Manual_pairfam_8.0.pdf.
Thurn, L., Besier, T., Ziegenhain, U., Jud, A., Kindler, H., Fischer, D., & Künster, A. K. (2017). Risikoepidemiologie und Kinderschutzstatistik in der frühen Kindheit: Eine Pilotuntersuchung mit dem „Wahrnehmungsbogen für den Kinderschutz“. *Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie, 45*(4), 295–302. https://doi.org/10.1024/1422-4917/a000448.
Töster, H. (2010). *Eltern-Belastungs-Inventar. German version of the Parenting-Stress-Index (PSI) by R.R. Abidin.* Göttingen: Hogrefe.
UCLA: Statistical Consulting Group. Lesson 3 Logistic Regression Diagnostics: 3.4 Influential Observations. Retrieved from https://stats.idre.ucla.edu/stata/webbooks/logistic/chapter3/lesson-3-logistic-regression-diagnostics/.
UNESCO Institute for Statistics (2012). *International Standard Classification of Education ISCED 2011.* Montreal.
Weiß, C. (2010). *Basiswissen Medizinische Statistik* (5.th ed.). Springer-Lehrbuch. Berlin: Springerhttps://doi.org/10.1007/978-3-642-11337-6.
Windham, A. M., Rosenberg, L., Fuddy, L., McFarlane, E., Sia, C., & Duggan, A. K. (2004). Risk of mother-reported child abuse in the first 3 years of life. *Child Abuse & Neglect, 28*(6), 645–667. https://doi.org/10.1016/j.chiabu.2004.01.003.
Witt, A., Brown, R. C., Plener, P. L., Brähler, E., & Fegert, J. M. (2017). Child maltreatment in Germany: Prevalence rates in the general population. *Child and Adolescent Psychiatry and Mental Health, 11*, 47. https://doi.org/10.1186/s13034-017-0185-0.
Witt, A., Glaesmer, H., Jud, A., Plener, P. L., Brähler, E., Brown, R. C., & Fegert, J. M. (2018). Trends in child maltreatment in Germany: Comparison of two representative population-based studies. *Child and Adolescent Psychiatry and Mental Health, 12*, 24. https://doi.org/10.1186/s13034-018-0232-5.
WMA General Assembly (1964). *World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects (No. 20).* https://doi.org/10.1001/jama.2013.281053.
Wu, S. S., Ma, C.-X., Carter, R. L., Ariet, M., Feaver, E. A., Resnick, M. B., & Roth, J. (2004). Risk factors for infant maltreatment: A population-based study. *Child Abuse & Neglect, 28*(12), 1253–1264. https://doi.org/10.1016/j.chiabu.2004.07.005.
Zimmermann, P., Vierhaus, M., Eickhorst, A., Sann, A., Egger, C., Förthner, J., & Spangler, G. (2016). [Growing up under adversity in Germany: Design and methods of a developmental study on risk and protective mechanisms in families with diverse psychosocial risk]. *Bundesgesundheitsblatt, Gesundheitsforschung Gesundheitsschutz, 59*(10), 1262–1270. https://doi.org/10.1007/s00103-016-2423-7.