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REVIEW ARTICLE

Internalizing and externalizing correlates of parental overprotection as measured by the EMBU: A systematic review and meta-analysis

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Abstract

Aspects of parenting including overprotection explain individual differences in child adjustment. This review and meta-analysis summarizes studies on parental overprotection and internalizing and externalizing problems. To ensure that findings could be compared as systematically as possible, the focus was on studies that used the overprotection scale of the *Egna Minnen Beträffande Uppfostran* ("Memories of my Parents' Upbringing") (EMBU) questionnaire, a popular instrument to measure parental overprotection. In total, we extracted 176 effects from 29 studies. A modified version of the Newcastle-Ottawa Scale was used to perform quality assessments for the included studies. Parental overprotection was associated positively with offspring internalizing and externalizing problems, with overall estimates ranging from $r = .14$ to $.18$. Moderator analyses suggested that effects of maternal were larger than effects of paternal overprotection. Other factors that moderated the strength of the association between overprotection and maladjustment included whether outcomes were self-reported or parent-reported, the design was cross-sectional or longitudinal, and publication year. Cultural context, age at exposure, and child sex did not explain differences between effect sizes. Most findings were based on cross-sectional studies and therefore do not constitute proof of causal relations. Many

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studies were of less-than-satisfactory quality regarding representativeness of the sample, descriptions of the data collection, and statistical analyses. There is a clear need for well-powered longitudinal studies to strengthen inferences about associations between parental overprotection and internalizing and externalizing problems.

KEYWORDS

EMBU, maladjustment, meta-analysis, overprotection, parenting, systematic review

1 | INTRODUCTION

Parenting styles and behaviors including overprotection have received much attention as predictors of child and adolescent well-being and internalizing and externalizing outcomes (e.g., Pinquart, 2017), which, in turn, affect many aspects of adjustment, including peer acceptance, educational and job performance, and quality of life (Clayborne et al., 2019; Rapaport et al., 2005). The literature on the potential impact of overprotection on offspring development is substantial but robust conclusions are hampered given study heterogeneity in design, participants, and exposure and outcome measures. To tackle this problem, we reviewed and meta-analyzed studies on parental overprotection and its association with offspring psychosocial adjustment.

Overprotective parents are excessively involved in children's daily activities and emotional experiences (Barber, 1996). The motivation is often benign and reflects parents' efforts to ensure children's safety and well-being. However, from a developmental perspective, parental overprotection can be harmful to adjustment. When children acquiesce to their parents' excessive worries, they can be at higher risk of developing internalizing symptoms, such as anxiety and depression. Conversely, children who resist their parents' overprotection might engage in externalizing behaviors, such as delinquency and substance use, as they explore opportunities for risk and responsibility on their own terms. Anxious or defiant behavior can, subsequently, elicit yet greater overprotection, which would then reinforce internalizing or externalizing symptoms (Hudson & Rapee, 2001). What is more, overprotective parents hinder children's development of autonomy and independence and interfere with children's acquisition of skills and confidence by limiting exposure to developmentally appropriate experiences (Schiffirin et al., 2014). In short, children with overprotective parents are likely at greater risk for maladjustment and possibly ill-prepared for the transition to adulthood (Ungar, 2009).

The literature on overprotection and adjustment is substantial but many studies are small, and it is not clear how pervasive the effect is on long-term adjustment. Despite a general perception that overprotection is problematic, we do not know whether this conclusion holds universally or is specific to certain groups or contexts. To summarize and synthesize this body of work, our review and meta-analysis focused on internalizing and externalizing correlates of parental overprotection as most studies included outcomes within these latent dimensions that organize common mental disorders. Whereas the internalizing spectrum incorporates a wide range of emotional symptoms that are directed inward, such as anxiety, the externalizing spectrum includes externally-focused behavioral symptoms, such as aggression.

Several instruments such as the *Egna Minnen Beträffande Uppfostran* ("Memories of my Parents' Upbringing") (EMBU) and the Parental Bonding Instrument (PBI) assess parental overprotection but cannot necessarily be considered tests of the same underlying construct (Arrindell & Engebretsen, 2000; Livianos-Aldana & Rojo-Moreno, 1999). To ensure comparability of findings across studies, we only included studies that used the EMBU questionnaire to measure overprotection. The EMBU overprotection scale is considered a factorially purer measure of parental

overprotection because the corresponding PBI measure has been shown to overlap strongly with the EMBU rejection scale (Arrindell & Engebretsen, 2000; Arrindell et al., 1998). The absence of rejection components in the PBI reflects a lack of content validity. By reviewing work that used the EMBU exclusively, we focus on other sources of variation between studies rather than potentially having to ascribe heterogeneity to the measure as such.

The original 81-item EMBU questionnaire measures adult perceptions of their parent's rearing style (Perris et al., 1980). Redesigned versions enabled child (EMBU-C) and adolescent (EMBU-A) self-reports as well as parent-reports (EMBU-P) (Castro et al., 1997; Gerlsma et al., 1991). Finally, a shortened version of the EMBU-C (s-EMBU) is available (Arrindell et al., 1999). The different EMBU versions are valid and reliable instruments for assessing parenting practices (Arrindell et al., 2005; Castro et al., 1993; Markus et al., 2003). Results yielded from the different EMBU versions can be compared across studies (Aluja et al., 2006; Markus et al., 2003). Here, we focus on the EMBU overprotection scale (e.g., "Your parents want you to reveal their secrets to them"), which captures parenting behaviors indicative of fear and anxiety for the child's safety, guilt engendering, overinvolvement, and intrusiveness. Respondents rate their mother's and father's (EMBU-C, EMBU-A) or their own (EMBU-P) overprotective behavior on a four-point scale ranging from 1 (*no, never*) to 4 (*yes, most of the time*). The overprotection scale is part of all EMBU versions and we examined its associations with maladjustment.

Several moderators might influence such associations, including child and parent characteristics such as sex and age, study design such as whether self- or parent-reports were used to assess maladjustment, and whether contemporaneous associations were examined or whether overprotection was examined as developmentally preceding maladjustment. For instance, it is possible that overprotection affects boys and girls differently, which would not be surprising given that externalizing problems are more common in boys and internalizing problems in girls (e.g., Broidy et al., 2003). Similarly, effects of maternal and paternal overprotection may differ as mothers and fathers play distinct roles in the family that shape their parenting behavior (Yaffe, 2020). By testing for an influence of study design (i.e., cross-sectional vs. longitudinal), we addressed questions concerning the long-term significance of overprotection. Further, we included cultural context as a moderator to test whether overprotection elicits different responses in youth across cultures. Possibly, overprotection is not associated with maladjustment in collectivistic societies, in which authoritarian parenting, including overprotection, is more common (e.g., Rudy & Grusec, 2006). Finally, we tested the moderating effect of publication year to determine whether the influence of overprotection changed over time, although evidence for moderation by publication year also may indicate a so-called decline effect, according to which effect sizes decrease over time as methodological rigor increases and more confirmatory as opposed to exploratory studies are published (Schooler, 2011).

2 | METHOD

This review adhered to the updated reporting guidelines provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021).

2.1 | Search strategy

Six electronic databases (ERIC, MEDLINE, PsycARTICLES, Psychology and Behavioral Sciences Collection, PsycINFO, SocINDEX) were searched with EBSCOhost during April 2020 using the following search terms: the string "EMBU" OR "Egna Minnen Beträffande Uppfostran" AND "overprotect*". Supplementary material part one provides the full search strategies. To capture all the relevant studies, full-texts were searched instead of just titles or abstracts, and we restricted the search to peer-reviewed journal articles available in English. We did not restrict the search to a specific publication date range nor to any particular outcome at this point: Although the focus of this review was on internalizing and externalizing outcomes, Table S4 in the supplementary material provides information on studies examining other outcomes of overprotection as measured by the EMBU, such as well-being and attachment.

2.2 | Study inclusion and exclusion criteria

Studies were included based on the following criteria:

1. Empirical studies with cross-sectional, retrospective, or longitudinal design
2. Studies examining direct associations between parental overprotection and child, adolescent, or adult internalizing and externalizing (including substance-related) problems
3. Studies using the EMBU overprotection subscale to measure parental overprotection
4. Studies focusing on population-based samples (i.e., non-selected groups of participants)

Exclusion criteria:

1. Studies using instruments other than the EMBU to measure overprotection
2. Studies examining indirect associations between parental overprotection and internalizing and externalizing problems (without reported direct effects)
3. Studies on outcomes other than internalizing or externalizing problems
4. Studies focusing on high-risk samples or otherwise select groups of participants (e.g., clinical samples, ethnic or sexual minorities)
5. Studies in languages other than English
6. Meta-analyses and reviews, methodological papers (without empirical data), annotations, and commentaries

2.3 | Screening

The PRISMA flowchart (Figure 1) depicts the selection procedure. After duplicate removal, titles and abstracts of 232 studies were screened independently by two raters (first and last author) in Rayyan (Ouzzani et al., 2016). Studies that did not meet the inclusion criteria were excluded ($n = 116$). Conflict cases were discussed and a consensus was reached. The full texts of the remaining 116 studies were scanned for eligibility by the first author; ambiguous cases

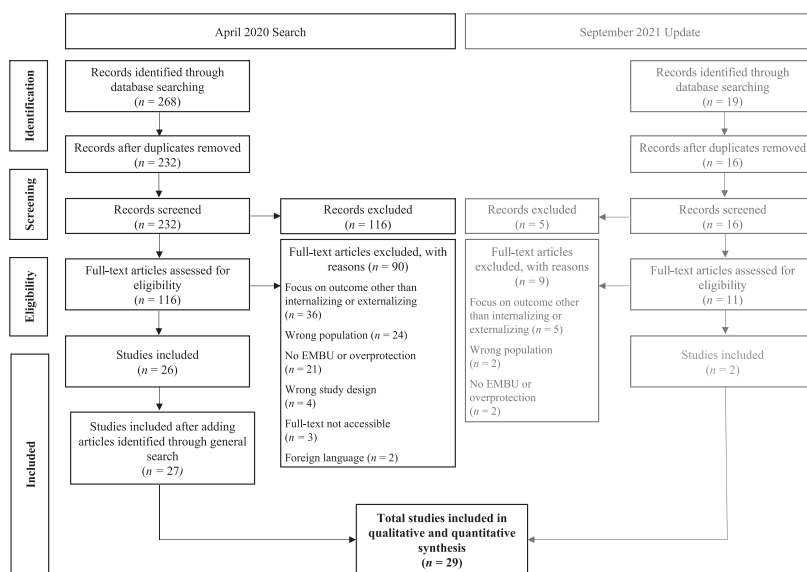


FIGURE 1 PRISMA flow diagram showing the process of study selection for inclusion in the systematic review and meta-analysis

were discussed with the last author. This resulted in exclusion of another 90 studies, mostly because instruments other than the EMBU were used or the EMBU overprotection subscale was not included in the analyses. Studies focusing on clinical samples as well as studies using the EMBU-scale with outcomes other than internalizing and externalizing problems that were excluded during this phase are listed in the supplementary material (Tables S4–S6). Full texts for three articles could not be traced; consequently, these were not included. One additional study was identified through a general search. The screening procedure eventually resulted in 27 studies being included in this review.

The review was updated in September 2021. The search strategy remained the same; however, results were limited to studies published since April 2020. After removal of duplicates, titles and abstracts of sixteen studies were screened by one rater (first author) (Figure 1). During the initial screening, studies that did not meet the inclusion criteria were excluded ($n = 5$). Eleven full-text studies were assessed for eligibility, of which two were added to this review, resulting in a total of 29 studies.

2.4 | Assessment of bias risk

The quality of selected studies was evaluated by the first author using a modified version of the Newcastle-Ottawa Scale adapted for cross-sectional studies (Wells et al., 2000, see supplementary material part 2). To ensure reliability, the last author assessed study quality for ~50% of studies ($n = 14$). Inter-rater reliability was high (85%) and disagreements were resolved by discussion. Studies were evaluated on representativeness of the sample, sample size, non-response, ascertainment of overprotection, assessment of internalizing and externalizing problems, and statistical procedure. A maximum of 10 stars could be attributed and the average score was 4.59 (Table 1). Overall, the quality of the included studies was thus less than satisfactory.

2.5 | Effect size extraction

Data were screened by the first author for all relevant effect sizes, with the following priorities: (1) If effects were reported for boys and girls separately as well as for the complete sample, separate effects were extracted rather than the effect based on the full sample, and (2) if effects of maternal and paternal overprotection were reported separately as well as the effect of total parental overprotection, separate effects were extracted. If information to compute effect sizes was unavailable or if only significant associations were reported, authors were emailed with a request to provide additional information and were given 4 weeks to respond. A reminder was sent after 2 weeks.

2.6 | Meta-analytic procedures and analyses

Pearson correlations (r) were used as the main type of effect size. Standardized β 's were converted to partial correlations using the formula $r = \beta + .05\lambda$, where λ equals 0 when β is negative and λ equals 1 when β is non-negative (Peterson & Brown, 2005). Odds ratios were converted to correlations using an online effect size calculator (<https://www.escale.site>). When means and standard deviations were reported, we used the R package *esc* to convert these to correlations (Lüdtke, 2019). If effect sizes were unavailable because corresponding authors did not respond, we conservatively coded these effects as $r = 0$. Effect sizes were converted to Fisher's z scale prior to performing the analyses and results were converted back to correlations for presentation and interpretation.

Data were analyzed using multilevel random-effects models to account for dependency between effect sizes coming from the same samples and/or studies. Adjusted and unadjusted effects were analyzed in separate models. We also estimated separate models for the two outcome categories (i.e., internalizing and externalizing problems), resulting in four meta-analyses altogether. Mean effect sizes were interpreted following Cohen's (1988) conventions (i.e.,

TABLE 1 Study characteristics and quality assessment ($n = 29$)

Study	Sample size and % male at baseline	n Effect Sizes	Setting	Sample	Age range or M_{age} at time of exposure and outcome	Study design	EMBU measure of outcome	Outcome and assessment of outcome	Quality assessment
Affrunti and Ginsburg (2012)	89 (51.7%)	6	US	Community-based	9.58	CS	C	Anxiety: self-report (SCARED)	Selection: ★☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 5
Berkien et al. (2012)	658 (46.0%)	8	Netherlands	Population-based	Girls: 13.7 Boys: 13.4	CS	C	Internalizing and externalizing behavior: self-report (YSR)	Selection: ★★☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 5
Brinkma et al. (2021)	1730 (51.0%)	3	Netherlands	Population-based	Exposure: 10.0-12.6 Outcome: 10.0-18.4	L	C	ADHD symptoms: parent-report (CBCL)	Selection: ★★☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 7
Buschgens et al. (2010)	2230 (49.2%)	14	Netherlands	Population-based	11.09	CS	C	Externalizing behavior: parent-report (CBCL) and teacher-report (TCP)	Selection: ★★☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 7
Haciomeroglu and Karanci (2014)	300 (51.0%)	2	Turkey	University students	19.55	CS	S	OCD symptoms: self-report (PI-WSUR)	Selection: ☆☆☆☆ Confounding: ★☆ Outcome: ★☆☆☆ Total: 2
Irons et al. (2006)	197 (13.2%)	2	UK and Canada	University students	Unknown	CS	S	Depressive symptomatology: self-report (CES-D)	Selection: ☆☆☆☆ Confounding: ☆☆ Outcome: ★☆☆☆ Total: 1
Janssens et al. (2009)	2230 (49.2%)	6	Netherlands	Population-based	Exposure: 11.09 Outcome: 13.56	L	C	Functional somatic problems: self-report (YSR)	Selection: ★★☆☆ Confounding: ★★ Outcome: ★★☆☆ Total: 7

(Continues)

TABLE 1 (Continued)

Study	Sample size and % male at baseline	n Effect Sizes	Setting	Sample	Age range or M_{age} at time of exposure and outcome	Study design	EMBU measure	Outcome and assessment of outcome	Quality assessment
Knappe et al. (2009)	1395 (51.2%)	2	Germany	Population-based	14-24	CS	FEE ^a	Social phobia: computer-assisted interview (M-CIDI)	Selection: ★★☆☆ Confounding: ★☆☆ Outcome: ★★★★★ Total: 7
Liu et al. (2020)	2705 (46.0%)	12	China	Population-based	13.42	CS	S	Non-suicidal self-injury: self-report (NSSI Function Assessment Scale)	Selection: ★☆☆☆ Confounding: ★☆☆ Outcome: ★★★★★ Total: 5
Mousavi et al. (2016)	227 (53.7%)	16	Malaysia	Students from private and international secondary schools	15.12	CS	C	Anxiety: self-report (SCAS)	Selection: ★☆☆☆ Confounding: ★☆☆ Outcome: ★★★★★ Total: 4
Mukhtar and Mahmood (2018)	200 (50%)	2	Pakistan	Students from public and private schools and colleges	15.69	CS	C	Relational aggression: self-report (DARAS)	Selection: ★★☆☆ Confounding: ★☆☆ Outcome: ★★★★★ Total: 6
Muris, Meesters, & Berg (2003)	742 (53.5%)	12	Netherlands	Secondary school students	14.45	CS	C	Internalizing and externalizing problems: self-report (YSR)	Selection: ☆☆☆☆ Confounding: ★☆☆ Outcome: ★★☆☆ Total: 3
Muris Meesters, & van Brakel (2003b)	1196 (51.8%)	4	Netherlands	Primary and secondary school students	12.60	CS	C	Anxiety: self-report (SCAS, SCARED, PSWQ)	Selection: ☆☆☆☆ Confounding: ★☆☆ Outcome: ★★☆☆ Total: 3
Muris et al. (2011)	261 (44.1%)	12	Netherlands	Primary school students	Exposure 1: 7.1 Exposure 2: 8.1 Outcome: 10.1	L	P	Anxiety: parent-report (SCARED)	Selection: ★☆☆☆ Confounding: ★★☆☆ Outcome: ★★☆☆ Total: 5

(Continues)

TABLE 1 (Continued)

Study	Sample size and % male at baseline	n Effect Sizes	Setting	Sample	Age range or M_{age} at time of exposure and outcome	Study design	EMBU measure	Outcome and assessment of outcome	Quality assessment
Niditch and Varela (2012)	124 (37%)	4	US	Middle and high school students	14.82	CS	C	Anxiety: self-report (RCMAS)	Selection: ☆☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 4
Nishikawa et al. (2010)	193 (74.1%)	8	Japan	High school students	16.4	CS	C	Internalizing and externalizing problems: self-report (YSR)	Selection: ☆☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 3
Oldehinkel et al. (2006)	2230 (49.2%)	3	Netherlands	Population-based	11.09	CS	C	Depression: self-report (YSR) and parent-report (CBCL)	Selection: ★★☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 7
Roelofs et al. (2006)	237 (48.1%)	12	Netherlands	Primary school students	10.5	CS	C	Internalizing symptoms: self-report (RCADS); Externalizing symptoms: self-report (TRA)	Selection: ★☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 5
Ruchkin et al. (1998)	108 (100%)	8	Russia	Secondary school students	15.0	CS	C	Aggression: self-report (AQ)	Selection: ☆☆☆☆ Confounding: ☆☆ Outcome: ★★☆☆ Total: 2
Sentse et al. (2009)	2149 (49.2%)	6	Netherlands	Population-based	Exposure: 11.09 Outcome: 13.55	L	C	Internalizing and externalizing problems: self-report (YSR) and parent-report (CBCL)	Selection: ★★☆☆ Confounding: ★★ Outcome: ★★☆☆ Total: 9
Smári et al. (2010)	570 (41.6%)	2	Iceland	Secondary school students	18-20: 77.4% 21-24: 4.6% > 30: 3.5%	CS	S	OCD symptoms: self-report (OCI-R)	Selection: ☆☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 3
Stevens et al. (2015)	162 (48%)	2	US	University students	19.7	CS	C	Anxiety: self-report (BAI)	Selection: ☆☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 3

(Continues)

TABLE 1 (Continued)

Study	Sample size and % male at baseline	n Effect Sizes	Setting	Sample	Age range or M_{age} at time of exposure and outcome	Study design	EMBU measure	Outcome and assessment of outcome	Quality assessment
van Brakel et al. (2006)	644 (52.3%)	2	Netherlands	Secondary school students	12.7	CS	C	Anxiety: self-report (SCARED)	Selection: ☆☆☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 3
van Oort et al. (2011)	2220 (49%)	1	Netherlands	Population-based	Exposure: 10–12 Outcome: 10–18	L	C	Anxiety: self-report (RCADS)	Selection: ★★☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 6
Veenstra et al. (2006)	2230 (49.2%)	3	Netherlands	Population-based	11.09	CS	C	Antisocial behavior: self-report (YSR) and parent-report (CBCL)	Selection: ★★☆☆ Confounding: ★☆ Outcome: ★★☆☆ Total: 7
Villegas-Pantoja et al. (2018)	276 (58.0%)	6	Mexico	Students enrolled in urban technical schools	15–24	CS	C	Alcohol use: self-report (AUDIT)	Selection: ★☆☆☆ Confounding: ☆☆ Outcome: ★★☆☆ Total: 4
Xia and Qian (2001)	127 (74.8%)	12	China	High school students	16–22	CS	C	Mental health symptoms: self-report (SCL-90)	Selection: ☆☆☆☆ Confounding: ☆☆ Outcome: ★★☆☆ Total: 2
Xu et al. (2017)	1345 (59.3%)	3	China	Middle school students	13.70	CS	S	Social anxiety: self-report (SCS-R)	Selection: ☆☆☆☆ Confounding: ☆☆ Outcome: ★★☆☆ Total: 2
Young et al. (2013)	150 (50.7%)	3	US	Community-based	Exposure: 10.5 Outcome: 1 year after initial assessment, mean age not mentioned	L	C	Anxiety: parent-report (SCAS)	Selection: ★☆☆☆ Confounding: ★★ Outcome: ★★☆☆ Total: 6

Abbreviations: CL, cross-sectional; L, longitudinal; C, EMBU-C (child-report); P, EMBU-P (parent-report); S, s-EMBU (short version of the EMBU-C).
 a German version of the EMBU-C.

$r = .10, .30,$ and $.50$ indicate small, medium, and large effect sizes, respectively). We calculated I^2 separately for sampling variance (level 1), within-study variance (level 2), and between-study variance (level 3) and performed one-tailed log-likelihood-ratio tests to determine whether variance components were significantly larger than zero (Assink & Wibbelink, 2016). Test statistics and confidence intervals for individual regression coefficients were based on the t -distribution (Knapp & Hartung, 2003). To assess the likelihood of publication bias, we conducted Egger's test for funnel plot asymmetry using sample size as a moderator to account for dependence among effect sizes (Rodgers & Pustejovsky, 2020). The significance level was set to the conventional level of $.05$. Meta-analyses were conducted in RStudio (version 1.4.1717) with R package metafor (version 3.0-2; Viechtbauer, 2010).

2.7 | Sensitivity analyses

We performed sensitivity analyses using only complete cases to determine the robustness of results across different types of models. That is, in the primary analyses, missing effect sizes were assumed to be null, potentially resulting in an underestimation of the true mean effect size. Complete case analysis presumably leads to a less conservative estimate of the actual effect but may also bias meta-analytic estimates because unreported effect sizes are more likely to be missing due to non-significance. Additional sensitivity analyses were performed in which influential outliers were excluded. To identify outliers, we computed standardized residuals and Cook's distances. Standardized residuals larger than 3.29 or smaller than -3.29 were considered outliers as well as Cook's distances larger than $4/n$ (Tabachnik & Fidell, 2013).

2.8 | Moderator analyses

Moderator analyses were conducted to examine causes of heterogeneity. We only assessed moderators in models with significant within-study ($I^2_{\text{level } 2}$) and/or between-study ($I^2_{\text{level } 3}$) variability and when each category of the moderator contained at least three studies. Continuous moderators were mean-centered prior to analyses. Each moderator was first tested separately in a univariate model because including multiple moderators with multiple categories can inflate type II error rates (Hox et al., 2010). Significant moderators were then added to a multiple moderator model to examine the unique moderating effect of these variables. Only moderator effects found in multiple models were interpreted. Moderators tested here included publication year, child sex, maternal vs. paternal overprotection, age at exposure, self-reported vs. parent-reported outcome, cross-sectional vs. longitudinal study design, and cultural context (individualistic vs. collectivistic). The latter was coded according to Hofstede's (2001) individualism index. It was not feasible to include EMBU-measure (i.e., EMBU-C, EMBU-P, or s-EMBU), specific outcome (e.g., anxiety, aggression), and outcome instrument as moderators because not all categories of these variables were based on at least three studies.

3 | RESULTS

Taken together, the 29 included studies produced 176 separate effects, of which 116 of overprotection on internalizing problems and 60 on externalizing problems. The studies, published between 1998 and 2021, were mostly cross-sectional (79.3%) and reported on 26,925 participants, with sample sizes ranging from 89 to 2230. Seven studies were based on the same sample (TRAILS) (Brinksmas et al., 2021; Buschgens et al., 2010; Janssens et al., 2009; Oldehinkel et al., 2006; Sentse et al., 2009; van Oort et al., 2011; Veenstra et al., 2006). Age across studies ranged from 7 to 30 years, although most studies examined outcomes in childhood and adolescence.

Most samples were from European and North-American countries ($n = 21$), with remaining studies conducted in China ($n = 3$), Japan ($n = 1$), Russia ($n = 1$), Turkey ($n = 1$), Pakistan ($n = 1$), and Malaysia ($n = 1$). One study included

only boys and another only girls but most studies used mixed-sex samples. Studies examined associations between overprotective parenting and broadband scales of internalizing problems, which include a wide range of emotional symptoms, or specific internalizing problems, such as anxiety and depression. Similarly, studies examined associations between overprotection and broadband scales of externalizing problems, including a range of behavioral problems, or specific externalizing problems, such as aggression or substance use.

With the exception of one study using parent-reports (EMBU-P), studies relied on child-report measures to assess overprotection (EMBU-C, EMBU-A, or s-EMBU). Fifteen studies used a single measure of parental overprotection (51.7%) and thirteen studies (44.8%) reported separate analyses for maternal and paternal overprotection. One study focused on only one parent. Outcomes were mostly self-reported (72.4%) and else assessed by parents or teachers.

Effect sizes included in the adjusted effects models were corrected mainly for demographic variables, such as sex and age. In four studies, estimates were corrected for baseline measures of maladjustment (Janssens et al., 2009; Muris et al., 2011; Sentse et al., 2009; Young et al., 2013). Six effect sizes (3.4%) were missing and subsequently included as null effects ($r = 0$). Effects were missing either because studies reported only significant estimates ($n = 5$) or because information to compute effect sizes was unavailable ($n = 1$). One study was excluded from the analyses because trajectory models were used and as such, the categorical scaling on the outcome was not comparable to the continuous scaling used in the vast majority of studies (Brinksma et al., 2021). Another study was excluded in the adjusted effects model because a method was used that rendered the resulting effect sizes incomparable to effects of the other studies (Nishikawa et al., 2010). Finally, we refrained from including results from stepwise regression models in which overprotection was excluded from the final model because of non-significance (Roelofs et al., 2006; Xu et al., 2017).

3.1 | Primary analyses and sensitivity analyses

Parental overprotection as assessed by the EMBU was associated significantly and positively with internalizing and externalizing problems (Table 2, Figures 2–5). Overall estimates ranged from $r = .14$ to $.18$, indicating small to moderate effects (Cohen, 1988). Mean effects adjusted for covariates were similar to mean unadjusted effects. Results of sensitivity analyses were consistent with primary results. In line with expectations, overall estimates based on complete case analyses were somewhat larger than estimates from the primary analyses in which missing effect sizes were assumed to be null. Excluding influential outliers did not affect parameter estimates substantially. Results of the log-likelihood-ratio tests showed that there was significant within-study (level two) and between-study (level three) variance in all models except for the unadjusted effects model focusing on externalizing behavior, in which there was no significant within-study variability (Table S7). We did not find evidence for publication bias based on Egger's Test (Table S8 and Figures S6–S9). The findings of the qualitative synthesis of studies focusing on clinical samples were similar to the findings of population-based studies, although studies based on clinical samples more often reported non-significant associations between overprotection and maladjustment (Tables S5 and S6).

3.2 | Moderator analyses

Heterogeneity indices revealed sufficient variance between effect sizes from the same study and between studies to proceed with moderator analyses in all meta-analytic models (Table S7). Results of univariate moderator analyses are presented in the supplementary material (Table S9). Here, we only interpret results of the multiple moderator models (see Table 3) including variables that were identified as significant moderators in the separate analyses. To facilitate interpretability, the reported mean moderator effects originate from univariate models.

TABLE 2 Unadjusted and adjusted effect sizes for parental overprotection and internalizing and externalizing problems

Model	Primary analyses			Sensitivity analyses										
	Descriptive statistics		(Partial) Correlation	Complete case analyses			Analyses without influential outliers							
Adjusted or Unadj	Outcome	n Samples/ publications	n Effects/ participants ^a	r	95% CI	p	n Excl. effects	r	95% CI	p	n Excl. outliers	r	95% CI	p
Unadjusted	Internalizing	16/17	58/11,021	.18	[.13, .22]	<.001	—	—	—	—	1	.17	[.13, .21]	<.001
	Externalizing	6/9	29/3745	.15	[.11, .18]	<.001	—	—	—	—	1	.14	[.11, .17]	<.001
Adjusted	Internalizing	18/21	58/13,077	.18	[.14, .23]	<.001	4	.19	[.15, .24]	<.001	—	—	—	—
	Externalizing	6/8	31/4375	.14	[.07, .20]	<.001	2	.16	[.09, .22]	<.001	1	.12	[.05, .20]	<.001

Abbreviations: Unadj., unadjusted; Excl., excluded; —, not applicable.

^aParticipant numbers were counted only once per sample.

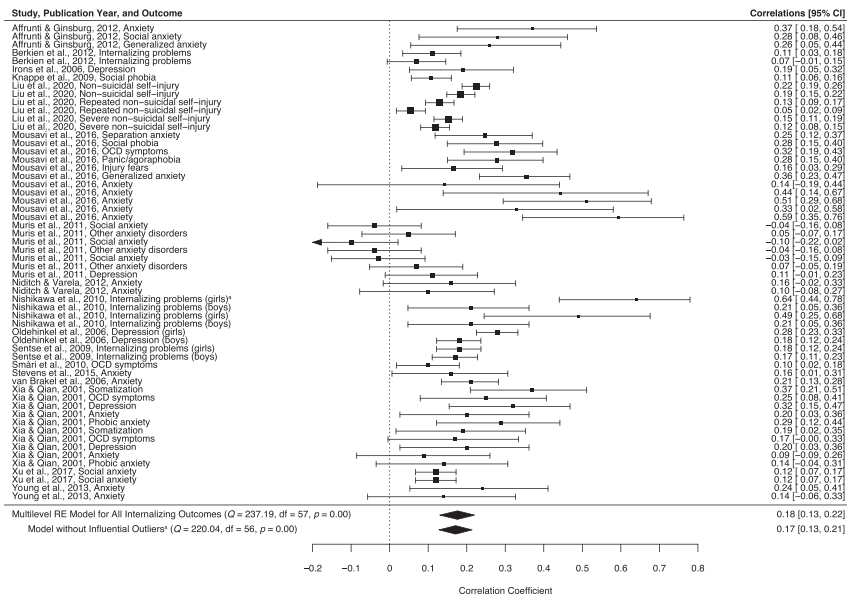


FIGURE 2 Forest plot for unadjusted effect of parental overprotection as assessed by the EMBU on internalizing problems. Note. Multiple effect sizes for a specific outcome may be included from the same study because effects were reported separately for different reporters of the exposure or outcomes (e.g., self-report and parent-report) or for different time points. RE = random effects. ^aInfluential outlier

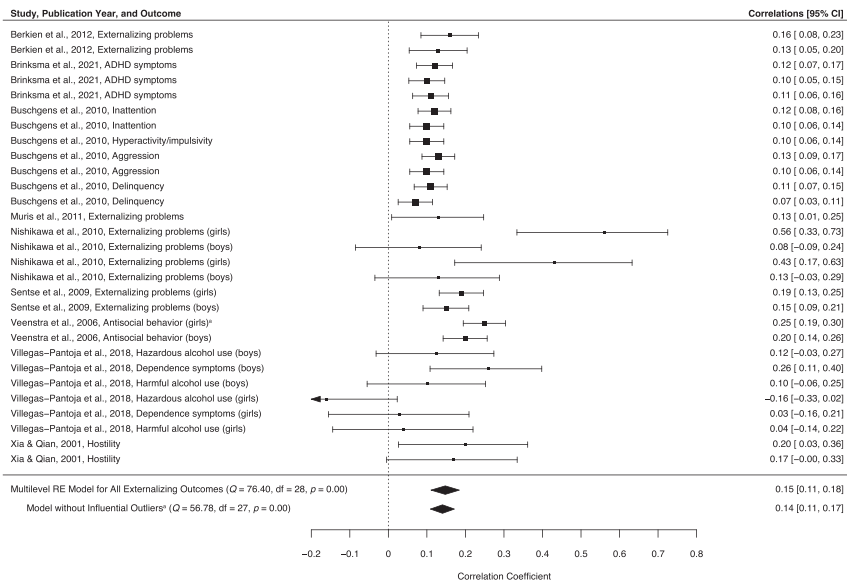


FIGURE 3 Forest plot for unadjusted effect of parental overprotection as assessed by the EMBU on externalizing problems. Note. Multiple effect sizes for a specific outcome may be included from the same study because effects were reported separately for different reporters of the exposure or outcomes (e.g., self-report and parent-report) or for different time points. RE = random effects. ^aInfluential outlier

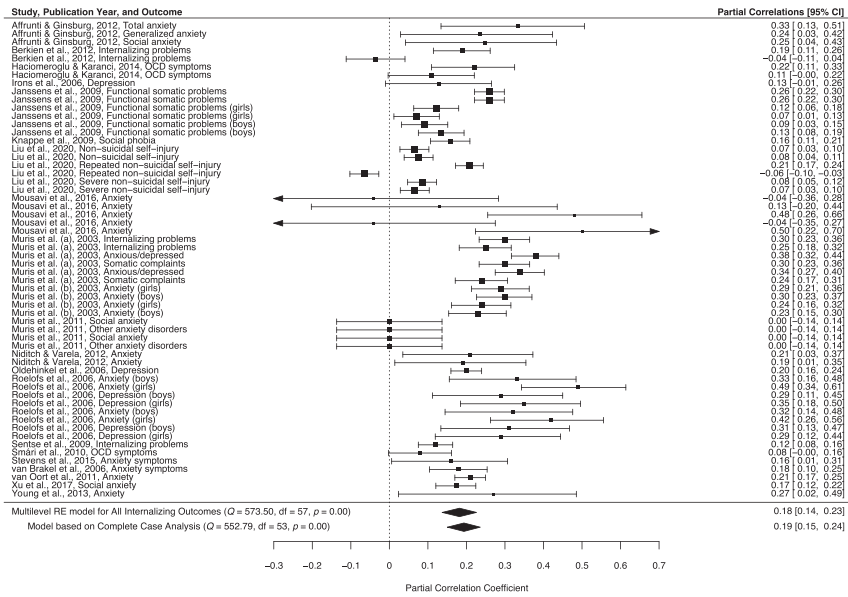


FIGURE 4 Forest plot for adjusted effect of parental overprotection as assessed by the EMBU on internalizing problems. Note. Multiple effect sizes for a specific outcome may be included from the same study because effects were reported separately for different reporters of the exposure or outcomes (e.g., self-report and parent-report) or for different time points. No influential outliers were identified. RE = random effects

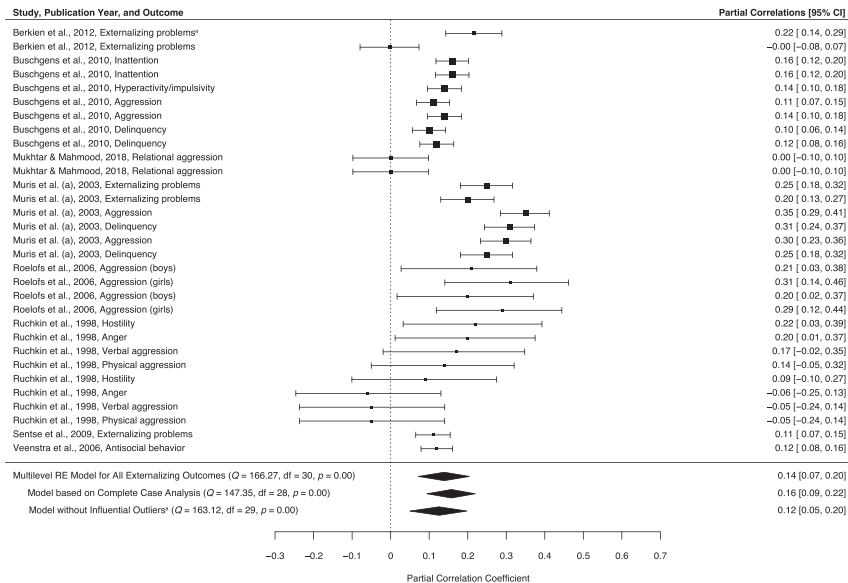


FIGURE 5 Forest plot for adjusted effect of parental overprotection as assessed by the EMBU on externalizing problems. Note. Multiple effect sizes for a specific outcome may be included from the same study because effects were reported separately for different reporters of the exposure or outcomes (e.g., self-report and parent-report) or for different time points. RE = random effects. ^aInfluential outlier

TABLE 3 Results of multiple moderator analyses

Model		Moderator analyses							
Adjusted or Unadj.	Outcome	Moderator	n Effects/ Publications	b	95% CI	F (dfs) ^a	p	I ² _{level 2} ^b	I ² _{level 3} ^c
Unadj.	Internalizing	Self- vs. parent-reported (ref) outcome	54/15	0.12	[0.12, 0.23]	4.40 (1, 52)	.04	.002*	.005*
	Externalizing	Publication year (continuous)	29/9	-0.01	[-0.01, 0.00]	4.91 (1, 27)	.04	.00	.001*
	Internalizing		40/10	-	-	12.69 (5, 34)	<.001	.002*	.001
Adjusted		Maternal (ref) vs. paternal overprotection	-	-0.07	[-0.11, -0.02]	-	.004	-	-
		Cross-sectional (ref) vs. longitudinal design	-	-0.16	[-0.24, -0.08]	-	<.001	-	-
		Self- vs. parent-reported (ref) outcome	-	0.16	[0.03, 0.29]	-	.02	-	-
	Publication year (continuous)	-	-0.01	[-0.02, 0.02]	-	.11	-	-	
	Individualistic (ref) vs. collectivistic culture	-	-0.08	[-0.23, 0.07]	-	.27	-	-	
	Externalizing	Maternal (ref) vs. paternal overprotection	22/5	-0.10	[-0.16, -0.03]	9.33 (1, 20)	.006	.002*	.01*

Abbreviations: Unadj., unadjusted; ref, reference category; -, not applicable.

^aOmnibus test of all regression coefficients in the model based on *F* distribution.

^bWithin-Study Variance (Level 2). Significant values indicate the presence of other, unexplored moderators.

^cBetween-Study Variance (Level 3). Significant values indicate the presence of other, unexplored moderators.

**p* < .05.

3.3 | Unadjusted effects models

Reporter of outcome was identified as a significant moderator in the unadjusted effects model on internalizing outcomes, with studies based on self-reported outcomes yielding larger associations between overprotection and internalizing problems than studies based on parent-reported outcomes ($r = .19$ for self-report and $r = .08$ for parent-report). In the model examining externalizing outcomes, we found a moderating effect of publication year. That is, the strength of the overall association between overprotection and externalizing problems was smaller in more recently published studies ($b = -.01$). The strength of this effect, however, was negligible. Cultural context, age at EMBU measure, child sex, study design, and parent sex did not moderate either of the unadjusted models.

3.4 | Adjusted effects models

Maternal vs. paternal overprotection, study design, and reporter of outcome moderated the overall effect of overprotection on internalizing problems. More specifically, effects of maternal overprotection, $r = .23$, were larger than effects of paternal overprotection, $r = .17$ in the univariate model. Cross-sectional studies, $r = .21$, reported stronger overall associations than longitudinal studies, $r = .09$ in the univariate model. In addition, larger effects of overprotection on internalizing problems were found in studies based on self-reported outcomes, $r = .20$ vs. parent-reported outcomes, $r = .07$ in the univariate model. For externalizing outcomes, maternal overprotection ($r = .20$) also yielded larger effects than paternal overprotection ($r = .10$). We did not find support for an influence of child sex, cultural context, age at EMBU measure, and publication year.

4 | DISCUSSION

We summarized and synthesized the literature on associations between parental overprotection as assessed by the EMBU and child, adolescent, and adult internalizing and externalizing outcomes. The EMBU is a widely-used instrument that has been translated into many languages and has been utilized in several studies on overprotection. This makes it a suitable choice to represent both breadth of the field while simultaneously allowing for comparisons that are not influenced by differences in instruments. Positive associations were found between overprotection and internalizing problems and overprotective parenting also was linked to externalizing problems. All meta-analytic estimates were modest but robust across different types of models and methods. Missing data and outliers did not influence the results substantially. As such, overprotection indeed seems to be a parenting behavior associated with offspring maladjustment.

We observed heterogeneity between effect sizes and examined whether methodological and substantive differences within and between studies functioned as moderators. Although the number of longitudinal studies was low ($n = 6$), adjusted moderation models showed that cross-sectional studies where overprotection and internalizing problems were assessed simultaneously reported greater associations than longitudinal studies where overprotection temporally preceded maladjustment. Adjusted effects usually came from studies that included sex and age in regression models but some also adjusted for baseline levels of maladjustment. Greater cross-sectional effect sizes are not surprising and might reflect (1) overestimated effects due to shared method variance when overprotection and adjustment are assessed at the same time and from the same reporter, (2) overprotection as parental reaction to maladjustment instead of the other way around, or, indeed (3) that the consequences of maladjustment are more severe closer in time and wane off after a while. Prospective longitudinal studies employing quasi-experimental designs such as matching on overprotection scores or cross-lagged designs that examine bidirectional prediction between overprotection and maladjustment are needed to understand the developmental ordering between both

concepts fully. That said, the small associations observed here suggest that overprotection as assessed by the EMBU may be less problematic than it is sometimes theorized to be.

In addition, our findings suggest that maternal and paternal overprotection affect offspring adjustment somewhat differently as effects of maternal overprotection were larger in adjusted effects models. Previous studies also have demonstrated that mothers are perceived as more controlling than fathers (Yaffe, 2020). Differences between mothers' and fathers' parenting behaviors may be rooted in traditional gender roles, with mothers still playing a more central role in child-rearing. On the contrary, we did not find that effects of overprotection differed between boys and girls, but the number of studies that reported separate effect sizes for boys and girls was low ($n = 8$). It would be of interest to examine in further research whether parental overprotection relates differently to maladjustment in boys and girls, considering the greater prevalence of internalizing problems among girls (Keiley et al., 2003), and greater prevalence of externalizing problems among boys (Broidy et al., 2003).

Next, effect sizes did not differ as a function of overprotection taking place in childhood or adolescence. This is notable as overprotection might be more appropriate at earlier points in development compared to later. That said, the EMBU overprotection scale assesses a form of parenting that is rather intrusive no matter the age of the child.

We also did not find that effects of overprotection differed between countries with individualistic or collectivistic cultures, although studies have demonstrated that effective parenting behaviors vary cross-culturally (Jambunathan et al., 2000). For example, authoritarian parenting that is high in demandingness and low in responsiveness is not consistently linked to maladjustment in collectivistic cultures (Chao, 1994; Rudy & Grusec, 2006). Perhaps, children and adolescents from more collectivistic cultures tend to interpret parental overprotection as an expression of love and care, whereas in more individualistic cultures such parenting is perceived as restrictive. However, because the number of studies from more collectivistic cultures was limited ($n = 9$), no robust conclusions can be drawn about differences. Systematic research on cross-cultural differences with regard to parenting and with respect to correlates of parenting should elucidate whether associations between overprotection and child maladjustment differ across cultural contexts. In addition, such studies would benefit from including more direct measurements of the cultural constructs of interest instead of depending on homogeneity in levels of cultural values within a group of people. Another interesting future direction for research would be to examine whether the influence of overprotection differs across socioeconomic contexts, as increased overprotection may be more warranted in contexts that are perceived as less safe for offspring.

4.1 | Quality of studies

The number of studies on links between overprotection as measured by the EMBU and maladjustment was large enough to warrant a review and meta-analysis and the positive overall associations appear to allow for robust conclusions. However, less-than-satisfactory quality ratings of most included studies imply at least three areas for improvement:

First, with respect to study design, participants were often recruited in universities or schools and most samples were small, which raises doubt as to whether results can be generalized. Additionally, few studies reported response rates. Biased selection into the study and equally selective retention to follow-up also limit the generalizability of results. The widespread use of self-report outcome measures may have biased results further. Effect sizes based on self-reported outcomes were larger than effect sizes based on parent-reported outcomes in models focusing on internalizing problems, indicating the relevance of the reporter. Ideally, multiple-informant data should be used to reduce shared method variance.

Second, failure to adjust for genetic effects could lead to an overestimation of the parenting effect. Children's inherited genes may evoke overprotective behavior in parents, or, instead, parental overprotection may be explained by the same (inherited) genes that explain offspring maladjustment (Jami et al., 2021). Only four studies included a measure of parental psychopathology as a proxy for genetic risk to correct for the possibility that observed associations were

due to genetic confounding (Buschgens et al., 2010; Oldehinkel et al., 2006; Sentse et al., 2009; Veenstra et al., 2006). Future studies on parenting and social development could benefit considerably from integrating genetic information on both parents and children (e.g., using polygenic indices) to detect potential confounding and consequently better understand parenting influence (Harden, 2021).

Third, cross-sectional designs are overrepresented in the literature but cannot determine causality and not even temporal order of constructs. For this, longitudinal designs that adjust for baseline levels of maladjustment are needed. Longitudinal assessments thus allow for stronger conclusions about whether overprotection is linked to increases in psychological and behavioral problems. Alternatively, maladjustment could be associated with increasingly overprotective rearing. Without empirical data that elucidate the direction of effects, conclusions regarding temporal order of overprotection and outcomes are hampered.

4.2 | Limitations of the review

Some limitations with respect to this review should also be noted. First, although we reduced heterogeneity by focusing on a single operationalization of overprotection, effects were based on a wide range of conceptualizations of outcomes and outcome instruments and, thus, the results of our meta-analyses do not reflect homogeneous effects. However, if an overall effect is found, as in our review, this adds to the robustness of the finding that parental overprotection as assessed by the EMBU is associated with offspring maladjustment. Further, in light of the current discussions on publication bias, it is important to note that significant results are more easily published than null findings, which threatens the validity of systematic reviews and meta-analyses. A number of well-carried-out but non-significant studies may not have been published and were therefore not included in this review. To overcome some of the problems of publication bias, future reviews could include more gray literature, such as unpublished manuscripts and conference proceedings (McAuley et al., 2000).

Next, the analyses presented here were based on population samples. Clinical samples and specifically selected populations were excluded. Parenting, especially overprotection, might be evoked in response to the needs of a child, and these might be different for high-risk samples. As such, overprotection in special populations might not carry the same risk as it does for children and adolescents without clinical diagnoses or for otherwise at-risk populations. A focus on population-based research therefore increases the likelihood that the results apply to a wider variety of individuals.

Finally, seven studies were based on the TRAILS sample. TRAILS findings were consistent with other studies, but the repeated use of the same data could lead to a biased literature in which the number of studies in favor of a particular phenomenon or association is overestimated. Meta-analyses can account for such bias either by selecting one study per sample or by applying multilevel methods, as also done here, and it is crucial to keep this in mind in narrative reviews as well.

5 | CONCLUSION

Higher levels of parental overprotection as assessed by the EMBU were linked to offspring maladjustment, with somewhat larger effects for maternal overprotection. Smaller associations were reported in longitudinal studies, which suggests that the negative impact of overprotective parenting as measured with the EMBU might not persist over time. We did not find that effects of overprotection differed between countries with individualistic and collectivistic cultures; however, the number of studies from collectivistic cultures was limited. Rigorous cross-cultural work is needed to examine cultural factors in outcomes of overprotection. Finally, suboptimal quality and cross-sectional design of many studies are important limitations that need to be tackled in future studies, as estimates might be biased, and conclusions pertaining to temporal order and long-term developmental impact of overprotection on maladjustment are hampered. In sum, although our findings suggest that overprotection is linked to maladjustment, there are avenues to improve the quality substantially and, consequently, the value of this research field.

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CONFLICT OF INTEREST

Seven of the screened studies (i.e., 2.8% of the total number of screened studies) were (co)authored by RV. Three of these studies were included in the present systematic review and meta-analysis, accounting for 10.3% of the total number of included studies. To avoid bias toward one's own articles as much as possible, RV was not involved in the screening process and in the risk-of-bias assessment. M.d.R. and T.K. have no conflict of interests to disclose.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study. References marked with an asterisk indicate studies included in the meta-analysis.

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