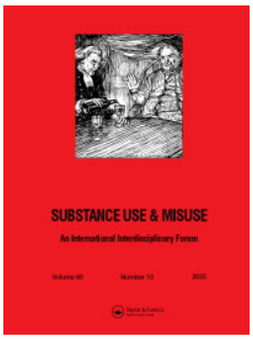

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Associations of Parental Monitoring and Behavioral Control with Substance Use in Adolescents and Emerging Adults: A Meta-Analysis

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ABSTRACT

Background: It is important to identify factors that may prevent and/or reduce substance use in adolescents and emerging adults.

Objectives: The present meta-analysis tested how parental general behavioral control (e.g., rule setting, strictness) and aspects of monitoring relate to substance use in adolescents and emerging adults. The study has been preregistered at OSF. Search in electronic databases resulted in 571 studies with 2,006,077 participants that were included in hierarchic random-effects meta-analysis.

Results: We found a small to moderate bivariate association ($r = -0.16$), and analysis of cross-lagged associations identified bidirectional links between control/monitoring and substance use ($r = -0.08$ each). Trim-and-fill analysis found no evidence for a file-drawer problem. While results did not vary between consumption of different substances, we found strongest associations in studies that assessed parental knowledge and child disclosure while associations were weakest in studies assessing parental solicitation. Associations of parenting and substance use were strongest in mid-adolescence. Effect sizes were also stronger when focusing on the parental dyad rather than on mothers and fathers separately and when information on parenting and substance use came from the same source.

Conclusions: We conclude that promotion of parental knowledge and child self-disclosure in mid-adolescence would be most promising for limiting young people's substance use.

KEYWORDS

Parenting; control; monitoring; substance use; alcohol; tobacco; cannabis; meta-analysis

Adolescents and emerging adults are at elevated risk for negative long-term effects of substance use, such as substance use disorders, other mental health problems, physical illness, premature death, and reduced educational attainment, although different harms are associated with the use of different substances (Hall et al., 2016; Nath et al., 2022). Therefore, it is important to identify factors that may prevent and reduce substance use.

Research suggests that parents have an important role in the development of substance use in the offspring, and numbers of prevention programs have been developed aimed at strengthening parenting skills (Ballester et al., 2021). In particular, monitoring and behavioral control/provision of structure have been shown to protect adolescents from substance use (e.g., Delforterie et al., 2016; Lac & Crano, 2009; Yap et al., 2017). The present meta-analysis integrates the results of research on parental monitoring and behavioral control with adolescent substance use.

Parental monitoring and behavioral control/structure

While the most common definition of parental monitoring refers to parental awareness of the child's activities, using parental knowledge as a proxy for parental monitoring has been criticized because knowledge is a mental state, rather than a parental behavior (Stattin & Kerr, 2000). Stattin and Kerr (2000) suggested to distinguish two sources of parental knowledge, namely solicitation (i.e., volitional soliciting of information by asking the child about his activities and whereabouts, checking objective records such as social media postings, or asking other people, such as the child's friends) and child disclosure (i.e., the child's unsolicited provision of information about his or her activities, whereabouts, and companions to their parents).

Pelham et al. (2024) suggested that parental monitoring may prevent substance use in the first place for fear that parents will find out and because monitoring may increase punishment for substance use as parents who monitor will be more likely to find out that substance use occurred. Their research mainly supported the first assumption. Other mechanisms may also play a role, such as limiting the number of substance use opportunities (e.g., when knowing that the adolescent child wants to attend a party where peers will drink alcohol or take drugs; i.e., context control) and strengthening the parent-child bond (Pelham et al., 2025).

Although scholars always considered control of the child's behavior to be highly relevant in the parenting context, there are different forms of control, and behavioral control (Barber, 1996) or provision of structure (Grolnick & Pomerantz, 2009), respectively, is perceived as most promising in

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influencing child behavior. This behavior refers to setting limits and negotiating boundaries and rules for appropriate behavior, use of incentives/positive reinforcement, clear feedback about misbehavior, and provision of reasonable and consistent consequences for behaviors (Grolnick & Pomerantz, 2009). Many measures of behavioral control include a combination of limit setting and monitoring (e.g., Wang et al., 2019).

Behavioral control and structure may reduce future substance use by a) guiding the behavior of the offspring through setting rules about responsible behavior and b) directly controlling opportunities for substance use (e.g., *via* limiting the unsupervised time with peers) and c) implementing negative consequences of substance use that had occurred (punishment) (Hardie, 2022).

A meta-analysis on associations of parenting factors with adolescent alcohol (mis)use indicates that parental monitoring shows the strongest association with alcohol use/misuse (with $r = -0.16$ to -0.22) while associations with parental behavioral control tended to be smaller ($r = -0.06$; Yap et al., 2017). A meta-analysis by Lac and Crano (2009) reported a small negative association of parental monitoring with marijuana use ($r = -0.21$). However, knowledge is needed on whether these results can be generalized to other substances, such as nicotine and illegal drugs. In addition, given the different conceptualizations and assessments of monitoring (Stattin & Kerr, 2000), it needs to be tested whether the results differ between these conceptualizations. In addition, as bivariate associations between parenting and substance use in the offspring could reflect effects of parenting on the child and vice versa, the goal of the present meta-analysis was to assess bivariate as well as cross-lagged statistical effects. Cross-lagged associations have not been analyzed in the meta-analyses by Lac and Crano (2009) as well as Yap et al. (2017).

Lac and Crano (2009) found that studies on parental knowledge showed stronger associations with adolescent marijuana use than studies that conceptualized monitoring in a different way. In addition, associations between parenting and adolescent substance use may vary by other factors, such as adolescent age (e.g., Mak et al., 2020). Therefore, the present meta-analysis searched for moderating variables.

Moderating effects of study characteristics

Previous meta-analyses on associations of parenting with offspring substance use found moderating effects of kind of parenting (Yap et al., 2017), substance (Pinquart and Lauk, 2025), mono-informant bias (Pinquart & Lauk, 2025), and child gender (Lac & Crano, 2009). As these meta-analyses either referred to parenting behaviors others than control/monitoring (parenting styles), less differentiated comparisons (sum of monitoring/knowledge versus behavioral control; Yap et al., 2017), or only one substance (marijuana, Lac & Crano, 2009; alcohol, Yap et al., 2017), we tested whether moderating effects of these variables are also found in the present meta-analysis. Although previous meta-analyses did not find moderating effects of child age (Lac & Crano, 2009; Pinquart & Lauk, 2025), parental gender (Pinquart & Lauk, 2025), use of valid parenting measures (Pinquart & Lauk, 2025) and publication status (Pinquart & Lauk, 2025), limited test power of these analyses indicates a need for further testing.

Kind of parenting

The work by Stattin and Kerr (2000; Kerr et al., 2010) indicates that child disclosure will more likely predict child behavior than parental solicitation because voluntary self-disclosure provides more valid information (as part of the children may conceal their behavior when being asked directly) and/or children perceive solicitation as illegitimate (e.g., when asking the child's friends or checking objective records). The meta-analysis by Yap et al. (2017) found stronger associations of alcohol use with parental monitoring (which was mainly operationalized as parental knowledge) than with parental behavioral control which might indicate that parental knowledge/child self-disclosure includes more protective mechanisms than behavioral control (e.g., motivation to not disappoint the parents or strengthening the bond with the parents; Pelham et al., 2024, 2025). Thus, the present meta-analysis asked whether associations of parenting with substance use would be weakest when addressing behavioral control or solicitation and strongest when addressing child disclosure and parental knowledge in general. The latter part of the assumption was based on research showing that child disclosure is most predictive of parental knowledge (Liu et al., 2020).

Kind of substance

A meta-analysis found stronger associations of authoritarian parenting with nicotine rather than alcohol use (Pinquart & Lauk, 2025). In addition, it has been suggested that adolescents may be more likely to conceal the use of illegal rather than legal substances from their parents (Schwartz & Voth, 2003), which could lead to weaker associations of parenting and use of (mostly) illegal substances. Thus, the present meta-analysis tested whether associations of parenting with offspring substance use would be strongest in the case of cannabis (which is illegal in many countries) and weakest in the case of alcohol (which is the most often consumed psychoactive substance in most countries).

Severity of use/misuse

Severity has not been addressed in previous meta-analyses. Nonetheless, as heavier consumption is harder to hide from parents, parents may be more likely to respond with control attempts.

Parental gender

As mothers tend to be more involved in the lives of their children than fathers, maternal parenting may be more strongly related to substance use in the offspring than paternal parenting. A study on parental knowledge by Tomcikova et al.

(2013) found support for this assumption while a meta-analysis on parenting styles did not (Pinquart & Lauk, 2025).

Use of validated parenting measures

As a recent meta-analysis on associations of parenting styles with substance use found no moderating effect of the quality of the parenting measure (Pinquart & Lauk, 2025), we tested whether this result can be replicated.

Mono-informant bias

Because a previous meta-analysis found stronger associations of parenting styles with substance use if information on both variables came from the same informant (e.g., child report on parenting and substance use), we tested whether similar results would be found for parental control/monitoring.

Child age

Associations of parental behaviors with substance use in the offspring were expected to show an inverted u-shaped age curve. Correlations may be low in early adolescence as most children do not yet use substances (irrespectively of parental behaviors) and in late adolescence/emerging adulthood as autonomy development reduces parental influences and young people get the legal right to buy alcohol, cigarettes, and, in part, marijuana. In addition, the dual process model of adolescent risk taking indicates that problems with self-control peak in mid-adolescence so that external control of their behavior could have the strongest effect at this age (Albert & Steinberg, 2011). Mak et al. (2020) found an inverted-u-shaped association of parental knowledge with drunkenness. Unfortunately, previous meta-analyses have only tested for linear age differences (Lac & Crano, 2009; Pinquart & Lauk, 2025).

Child gender

Gender development theory suggested that girl's behavior may be more susceptible to parental influences than boy's behavior (Gilligan, 1982), and Lac and Crano (2009) found stronger associations of parental monitoring with marijuana use in girl-only samples than in other samples. The present meta-analysis tested whether studies with larger percentages of female participants reported stronger effect sizes.

Publication status

Rosenthal (1979) had suggested that nonsignificant results are at higher risk of being unpublished, leading to an overestimation of effect sizes in published research. Although a meta-analysis on parenting styles found similar results of published and unpublished studies (Pinquart & Lauk, 2025), we tested whether unpublished studies reported smaller effect sizes than published studies, as we had more test power than the previous meta-analysis for identifying such an effect.

Research questions

In sum, the first research question asked for the size of bivariate associations of parental behavior control and monitoring with substance use in the offspring. The second research question asked for cross-lagged effects of this parental behaviors on change in substance use and of initial substance use on change in parenting. The third research question asked whether the size of the association will be stronger in studies on child solicitation and parental knowledge, on marijuana rather than on legal substances, in the case of heavy use, when referring to maternal parenting, when all data come from the same informant, in midadolescence (rather than in younger and older participants), in samples with higher percentage of girls, and in published studies. Moderating effects of the validity of the parenting measure were investigated exploratively. No moderating effects of the use of validated substance use measures were analyzed due to lack of between-study variability.

Methods

Sample

Studies were identified through electronic databases PsycInfo, MEDLINE, Web of Science, and PSYNDEX (an electronic psychological database from German-speaking countries), using a combination of search terms (alcohol OR drinking OR tobacco OR nicotine OR cigarettes OR marijuana OR cannabis OR hashish OR substance use OR substance misuse OR drug use) AND (parental control OR behavioral control OR parental monitoring OR parental solicitation OR child disclosure). References sections of the identified studies were checked for additional papers.

Studies were included if meeting the following conditions:

a. The studies assessed associations of parental behavioral control or indicators of parental monitoring with use of psychoactive substances (alcohol, nicotine, marijuana, other/mixed drugs) in the offspring.
b. The substances were not prescribed by a physician.
c. The sample consisted of adolescents and emerging adults (mean age < 25 years).
d. Bivariate and/or cross-lagged associations of the parenting variable(s) with substance use were reported or could be computed based on the available information.
e. The study was published or made available before June, 2024.

Studies were excluded if they

a. assessed parental psychological control or harsh control (physical punishment) because these behaviors are unlikely to protect from substance use (Yap et al., 2017),
b. assessed exclusively substance-use specific parental control/monitoring, such as rules for consuming substances in the parental home, as they will be addressed in a separate meta-analysis,

c. reported exclusively multivariate effect sizes that statistically controlled for third variables (as multivariate effect sizes vary depending on the amount of shared variance of the independent variable and the third variables),
d. had samples older than 25 years (as these studies assessed only retrospective reports on parenting of questionable validity),
e. provided only sum-measures of child outcomes that combined substance use with other behaviors,
f. duplicated the results of included studies, and
g. were not available via interlibrary loan or by receiving a copy from the author(s).

We did not limit the included studies to those written in English; native speakers or translation software (DeepL, 5 papers) was used for translating relevant parts of the papers, if needed. Unpublished studies that had been identified in the electronic data bases or in the references of published studies were included in order to reduce the risk for bias due to file-drawer problems.

The literature search was completed on June 10th, 2024. We identified 1725 studies. If the full text was not available, authors were asked for a copy in the case of available contact information. After screening and assessing for eligibility, 571 studies were included in the meta-analysis. The PRISMA flow chart is provided in Figure 1. Selected study characteristics and the references of the included papers can be found in the electronic supplements ESM1 and ESM2. The study has been preregistered at OSF (osf.io/ue34r).

The following variables were coded from the individual studies: number of adolescents/emerging adults, response rate, mean age, percentage of female children, percentage of members of ethnic minorities, publication status

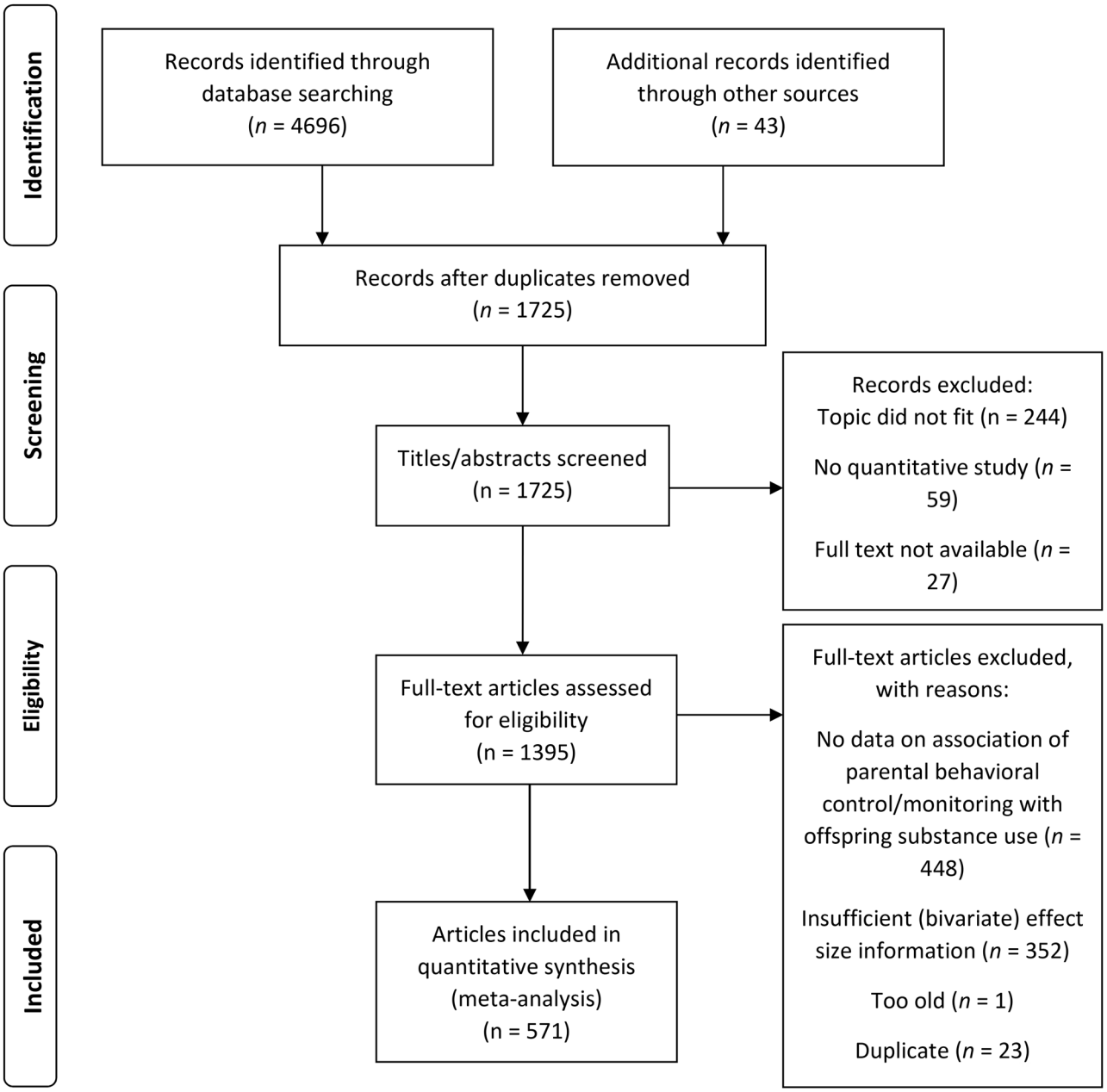

Figure 1. PRISMA 2009 flow diagram.

(1 = published, 2 = unpublished), kind of parenting (1 = behavioral control/mix of behavioral control and monitoring, 2 = parental knowledge, 3 = parental solicitation, 4 = child disclosure), parental figure(s) (1 = mother, 2 = father, 3 = parental dyad), rater of parenting (1 = child, 2, = parent, 3 = observer, 4 = multi-informant), rater of substance use (1 = child, 2 = parent, 3 = others), type of substances consumed (1 = alcohol, 2 = nicotine/cigarettes, 3 = marijuana, 4 = other/mixed substances), use of validated parenting measure (1 = no, 2 = yes), mono-informant bias (1 = no, 2 = yes), interval of longitudinal assessments (in months), and the size of bivariate and cross-lagged correlation between parenting and substance use in the offspring. The quality screening of quantitative studies from the Mixed Methods Appraisal Tool (MMAT) was used for evaluating study quality (Hong et al., 2018). A review protocol is available on request.

For assessing inter-rater reliability, the first author (who has published more than 75 meta-analyses) coded all studies and the second author (a graduate student trained in research methods) coded a subsample of 118 studies. Mean agreement of 91.3% was achieved for categorical variables and a mean Intraclass Correlation Coefficient = 0.83 for continuous variables. Disagreements were resolved by discussion.

Statistical procedures

First, correlations were transformed using Fisher's *r*-to-*z* transformation. Outliers that were more than two *SD* from the mean effect size were recoded to the value at two *SD* in order to avoid a disproportional weight on the mean effect size (Lipsey & Wilson, 2001). After computing weighted mean effect sizes, the *z*-scores were back-transformed to the original metric of *r*.

As many studies provided more than one effect size (e.g., in the case of assessing different substances or different aspects of monitoring), the dependency of effect sizes was addressed with multi-level meta-analysis (Cheung, 2014). This approach considers the hierarchic data structure as individual correlations (at Level-1) are nested within samples (Level-2), which are nested within studies (Level-3). Random-effects models were computed that consider random population effects as well as sampling error. For analyzing moderator effects of sample or study characteristics, predictor variables were introduced at Level-2 or 3, respectively. Risk for publication bias was addressed with trim-and-fill analysis (Duval & Tweedie, 2000). This analysis tests for an asymmetrical distribution of the effect sizes and imputes possibly missing effect sizes. Data were analyzed with *metafor* in R (Viechtbauer, 2024).

Results

The included studies provided data from 2,006,077 participants. At the time of assessing behavioral control/monitoring, they had a mean age of 14.86 years (*SD* = 2.14); 50.7% were female, and 39.6% were members of an ethnic minority. The included studies most often addressed alcohol (*n* = 339), followed by tobacco (*n* = 152), and marijuana use (*n* = 134). The consumption of other substances (e.g., amphetamines) and/or mixed substances was addressed in 168 studies. While 399 studies reported only concurrent associations of parenting with substance use in the offspring, 172 studies provided longitudinal data with a mean interval of 32.9 months. Whereas 245 studies related substance use in the offspring to parental behavioral control (or a combined measure of control and monitoring), 344 studies reported associations with parental knowledge, 72 studies with parental solicitation, and 29 studies with child self-disclosure.

Regarding quality (Hong et al., 2018), most studies used convenience samples (*n* = 441); 130 studies used probability samples, and 36 studies had selected participants according to criteria that may affect associations of parenting with substance use such as children of parents with substance use disorders or treatment-seeking youth. Only 23.2% of the studies confirmed a response rate ≥ 80% (*n* = 132); 40.8% of the studies used validated measures of parenting (*n* = 233), but no study provided information on the validity of self-reported substance use, such as drug screenings or data from a second informant. Complete information for computing associations of parenting with substance use was provided in all of the included studies (see, ESM 3).

A three-level meta-analysis was specified which estimated within-sample variance (mainly reflecting different substances and/or aspects of parenting), between-sample variance of the individual study (if, for example, separate results are reported for female and male adolescents), and between-study variance. Given the content overlap of behavioral control scales and monitoring scales, effect sizes on both measures were combined in the first step of analysis. Separate analyses were computed for bivariate associations and cross-lagged associations. As shown in Table 1, behavioral control/monitoring showed a small-to-moderate negative association with substance use (*r* = −0.16). The statistical significance of the variance components was tested with likelihood-ratio-tests. There was significant within-sample variance, within-study variance, and between-study variance, thus indicating the need for moderator analysis.

Analyses of cross-lagged associations indicated that initial levels of behavioral control/monitoring predicted very small declines of substance use (*r* = −0.08). Similarly, initial levels of substance use predicted very small declines in parental control/monitoring (*r* = −0.08).

Next, it was tested whether the size of the association differed by the kind of assessed parenting. As shown in Table 2, bivariate associations with substance use were stronger (i.e., more negative) in studies that assessed parental knowledge and child disclosure than in studies that assessed behavioral control (e.g., rule setting). In contrast, associations of solicitation with substance use were less negative than associations of the other assessed parenting variables. We also checked whether there are statistically significant associations of all four aspects of parenting with substance use. This was the case for bivariate correlations (Table 1). The size of associations varied between *r* = −0.19 (child disclosure) and *r* = −0.12 (parental solicitation). With the exception of associations of parental

Table 1. Weighted mean bivariate and cross-lagged associations of parental control/monitoring with substance use.

Correlation	*k*	*r*	r_{LL}	r_{UL}	*t*	*Q*	level-1 variance	level-2 variance	level-3 variance
Overall analysis (substances and parental behavior combined)									
Bivariate association	1807	−0.164	−0.171	−0.155	−38.29***	35,029.28***	0.0041***	0.0003***	0.0069***
Control/monit. – change in substance use	217	−0.077	−0.092	−0.062	−10.17***	1,225.06***	0.0009	0.0007	0.0027***
Substance use – change in control/monit.	75	−0.080	−0.104	−0.056	6.76***	1,007.87***	0.0004	0.0000	0.0010***
Analyses of different aspects of parenting									
Behavioral control									
Bivariate association	573	−0.143	−0.157	−0.129	−20.43***	9,291.02***	0.0027***	0.0000	0.0086***
Control – change in substance use	62	−0.079	−0.110	−0.049	−5.20***	380.79***	0.0007	0.0001	0.0033
Substance use – change in control	20	−0.120	−0.189	−0.050	−3.58**	140.47**	0.0000	0.0000	0.0063
Parental knowledge									
Bivariate association	962	−0.183	−0.194	−0.172	−33.39***	22,809.05***	0.0029***	0.0007**	0.0070***
Knowledge – change in substance use	115	−0.083	−0.101	−0.066	−9.43***	531.68**	0.0006	0.0006	0.0023*
Substance use – change in knowledge	34	−0.072	−0.099	−0.044	−5.25***	55.52**	0.0003	0.0011	0.0000
Solicitation									
Bivariate association	191	−0.117	−0.137	−0.098	−11.72***	1,699.14***	0.0050**	0.0000	0.0035***
Solicitation – change in substance use	24	−0.024	−0.063	.015	−1.26	94.81***	0.0000	0.0017	0.0017
Substance use – change in solicitation	11	−0.056	−0.110	−0.002	−2.33*	244.44***	0.0057***	0.0000	0.0000
Child disclosure									
Bivariate association	79	−0.190	−0.235	−0.145	−8.22***	846.15***	0.0028	0.0000	0.0112***
Disclosure – change in substance use	17	−0.092	−0.140	−0.044	−4.03***	93.00***	0.0005	0.0012	0.0012
Substance use – change in disclosure	11	−0.091	−0.198	.017	−1.88	201.97***	0.0008***	0.0043	0.0043
Substance-specific analyses									
Alcohol									
Bivariate association	846	−0.162	−0.173	−0.152	−29.27***	12,533.43***	0.0034***	0.0000	0.0075***
Control/monit. – change in substance use	136	−0.066	−0.086	−0.046	−6.56***	875.35***	0.0002	0.0009	0.0032*
Substance use – change in control/monit.	58	−0.079	−0.108	−0.049	−5.38***	877.43***	0.0046***	0.0000	0.0012
Tobacco									
Bivariate association	310	−0.149	−0.163	−0.133	−19.15***	7,416.04***	0.0039***	0.0000	0.0057***
Control/monit. – change in substance use	15	−0.075	−0.105	−0.046	−5.50***	30.41**	0.0000	0.0006	0.0006
Substance use – change in control/monit.	2	−0.098	−0.364	.184	−4.37	.75	0.0000	0.0000	0.0000
Marijuana									
Bivariate association	261	−0.165	−0.182	−0.149	−19.48***	4,594.86***	0.0042**	0.0010	0.0048***
Control/monit. – change in substance use	12	−0.060	−0.101	−0.020	−3.29**	29.59**	0.0002	0.0008	0.0008
Other/mixed substances									
Bivariate association	390	−0.176	−0.193	−0.160	−20.91***	9,941.57***	0.0071***	0.0000	0.0069***
Control/monit. – change in substance use	55	−0.095	−0.122	−0.067	−6.78***	244.46***	0.0024***	0.0006	0.0021
Substance use – change in control/monit.	15	−0.068	−0.101	−0.034	−4.30***	35.88***	0.0016	0.0000	0.0000

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < .001$. There were not sufficient data for meta-analyzing associations of initial marijuana use with change in behavioral control/monitoring.

solicitation with change in substance use and associations of substance use with change in child disclosure, the cross-lagged associations of parenting with substance use were also significant.

The size of the association of parental control/monitoring with substance use did not vary between consumption of alcohol, nicotine, marijuana, and other/mixed substances (Table 2). Mean substance-specific bivariate and cross-lagged associations are depicted in the lower part of Table 1.

As the numbers of cross-lagged effect sizes were considerably lower than the numbers of bivariate associations, further moderator analyses focused only on bivariate associations of parenting with substance use. The size of associations did not differ between studies that assessed frequency/quantity of substance use from low to high dose and those focusing on heavy use and substance use disorders (Table 2). Studies that assessed behavior of the parental dyad found stronger negative associations with substance use than those that assessed the behavior of mothers and/or fathers separately. In addition, there were stronger associations if information on parenting and substance use came from the same source (i.e., the report of the offspring). In contrast, validity of the parenting measure did not moderate the size of associations between parenting and substance use.

With regard to moderating effects of age, there was a significant linear and quadratic age effect. As shown in Figure 2, the negative correlation of control/monitoring with substance use increased until the age of 15 years and declined thereafter. There was no moderating effect of child gender. Similarly, the size of correlation did not vary between published and unpublished studies.

Funnel plots are shown in ESM4. The trim-and-fill procedure added 7 possibly missing bivariate effect sizes but the weighted mean effect size remained unchanged. Trim-and-fill analysis added 17 effect sizes in the analysis of association of initial control/monitoring with change in substance use and 12 effect sizes in the analysis of associations of initial substance use with change in control/monitoring. Both adjusted effect sizes became slightly more negative from $r = -0.08$ to $r_{corr} = -0.09$ and $r_{corr} = -0.10$, respectively.

Discussion

The present meta-analysis found negative concurrent correlations between parental behavioral control/monitoring and substance use in the offspring, and longitudinal data indicated bidirectional links. While results did not vary by the kind of psychoactive substance, associations were strongest

Table 2. Test for moderating effects of sample and study characteristics on bivariate associations of parenting with substance use in the offspring.

Moderator	*b*	*LL*	*UL*	*df*	*t*
Kind of behavioral control/monitoring ($F(3,1802) = 45.61$, $p < 0.001$); comparator is global control measure (e.g., rule setting, use of consequences)					
parental knowledge	−0.058	−0.071	−0.044	1802	−8.57***
solicitation	0.033	0.014	0.052	1802	3.38***
child disclosure	−0.049	−0.075	−0.024	1802	−3.84***
Kind of substance ($F(3,1803) = 1.23$, $p < 0.30$); comparator is alcohol use					
tobacco	0.008	−0.005	0.021	1803	1.19
marijuana	−0.007	−0.021	0.007	1803	−0.97
other/mixed drugs	−0.004	−0.018	0.011	1803	−0.51
Substance use measure ($F(2, 1804) = 1.22$, $p < 0.30$); comparator is continuous measure of frequency/quantity of substance use					
heavy use	0.006	−0.008	0.020	1804	0.79
substance use disorder	0.036	−0.017	0.089	1804	1.33
Which parent ($F(2,1804) = 4.78$, $p < 0.009$); comparator is the parental dyad					
mother	0.033	0.010	0.056	1804	2.78**
father	0.038	0.013	0.063	1804	2.95**
Validated parenting measure	−0.004	−0.016	0.008	1804	0.49
Common method bias	−0.046	−0.070	−0.023	1791	−3.87***
Age (linear)	−0.047	−0.066	−0.027	1556	−4.60***
Age (quadratic)[1]	0.002	.001	0.002	1556	4.40***
% female adolescents	−0.000	−0.000	0.000	1653	−1.26
Published	0.006	−0.016	0.029	1805	0.29

Note. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. [1]For testing an inverted u-shaped moderating effect of age, the linear and quadratic age term were entered simultaneously.

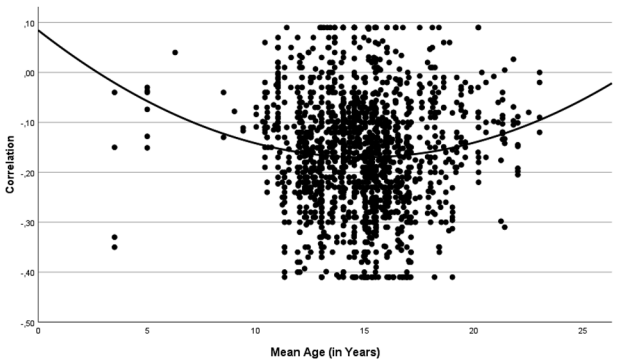

Figure 2. Age differences in the association of control/monitoring with substance use in the offspring.
Note. Age refers to the age at assessing control/monitoring.

for child disclosure and parental knowledge, and weakest for parental solicitation. In addition, associations were stronger if studies assessed the parental dyad rather than behavior of the individual parent, if data on parenting and substance use came from the same informant, and if the children were in mid-adolescence rather than being younger or older. Compared to previous meta-analyses on associations of parenting with substance use, the present study added the analysis of cross-lagged effects, a comparison of different aspects/measures of monitoring, and a broader focus on moderating effects of sample and study characteristics.

While researchers have suggested that parental behavioral control (Hardie, 2022) and monitoring (Pelham et al., 2025) are relevant for preventing and reducing substance use in the offspring, it is important to understand which aspects of parenting are most predictive and who benefits the most. The present meta-analysis provides some important answers. First, child disclosure and parental knowledge showed stronger concurrent associations with substance use than behavioral control (e.g., limit-setting) and parental solicitation. Child disclosure, parental knowledge, and behavioral control had similar statistical effects on changes in substance use, while solicitation did not predict changes in consumption. Thus, parents need to have knowledge of their child's behavior, which should ideally come from child self-disclosure. Disclosing children may use fewer psychoactive substances because they do not want to disappoint their parents. Additionally, parents who are aware that their child plans to use substances can respond by setting limits, thereby reducing opportunities for (high levels of) substance use. Therefore, strengthening the parent-child bond and encouraging children to disclose information is recommended, rather than soliciting information about the child's behavior and plans, which did not predict changes in substance use.

Second, the size of the mean correlations suggests that parents do have some influence, although the statistical effects of behavioral control and monitoring on change in substance use are, on average, only very small in statistical sense (Cohen, 1992). As substance use is influenced by a broad range of factors, including peer relations, school prevention programs, availability of substances, and personality characteristics (e.g., Watts et al., 2024; Yap et al., 2017), it is not surprising that the predictive power of individual parental behaviors is limited. Furthermore, general parental control and monitoring may have less impact in cases where mothers and fathers hold permissive attitudes (e.g., after children have passed the legal age for consuming alcohol; Ryan et al., 2010).

Third, our analysis of cross-lagged effects indicates that we cannot interpret bivariate associations of behavioral control and monitoring with substance use as purely reflecting parental influence. Present or past substance use in the offspring predicts declines in parental control and monitoring, as parents adjust their rules and/or because substance-using children become less self-disclosing.

Fourth, regarding the question of who might benefit most from parental behavioral control and monitoring, our results show the strongest associations with substance use during mid-adolescence. This is the time when growing numbers of young people begin to experiment with substances (Johnston

et al., 2022), self-control issues peak (Albert & Steinberg, 2011), and most young people still live at home, providing ample opportunities for parental influence. Additionally, the observed stronger associations with parental behavior, as compared to maternal or paternal behavior alone, suggest that those children benefit more if both parents exhibit high levels of behavioral control and monitoring.

In contrast, the lack of moderating effects of child gender, type of psychoactive substance, and intensity of use indicate that monitoring and behavioral control work similarly for boys and girls, light and heavy users, and consumers of different substances. Nonetheless, we must be mindful that there was insufficient data to separately analyze the associations between parenting and the use of hard drugs ($n = 7$ studies), and only a small number of studies assessed substance use disorders ($n = 13$), which limited the power of these analyses.

Finally, while the results discussed previously are practically relevant, some findings are more pertinent for interpreting or conducting research. The observed stronger associations of parenting with substance use in studies that relied exclusively on one source of information (i.e., the offspring) suggest that researchers tend to overestimate the size of associations between parenting and substance use if they rely solely on one informant, due to shared measurement errors. Moreover, children's perceptions of parenting may show stronger associations with their substance use than parental self-reports, as parental behaviors are unlikely to affect the child unless the child perceives them. The lack of moderating effects of the validity of the parenting measure and of publication status indicates that our results were robust with respect to these study characteristics.

Limitations and conclusions

Some limitations of the present meta-analysis have to be mentioned. First, compared to cross-sectional data, there were fewer longitudinal studies available. Second, substance-specific analyses could only address alcohol, nicotine, and marijuana as few studies provided separate data on associations of parenting with other substances. Third, the included studies relied on self-reports of substance use which could, in part, be biased. Future studies should add more objective data, such as biological measurements. Fourth, we had not differentiated between initiation and progression of substance use because Yap et al. (2017) found similar associations of them with parenting. Finally, we focused on general, rather than substance-specific parenting. The latter behavior needs to be addressed in a separate meta-analysis.

Despite these limitations, the following conclusions can be drawn. As average bivariate associations of behavioral control/monitoring with offspring substance use were only of small-to-moderate size and cross-lagged effects even very small, we should have realistic expectations about the size of possible effects of these aspects of parenting. Small effects are, nonetheless, practically important, in particular when combined with other changeable family variables (Yap et al., 2017). Second, associations of parenting with substance use in the offspring are bidirectional. Third, the identified age differences indicate that effects of parental control/monitoring on substance use are maximized in middle adolescence, thus indicating an important window for prevention and intervention. Fourth, our results indicate that parenting interventions should promote parental knowledge and the child's willingness to disclose their intentions and behaviors to their parents. Because parental warmth and willingness to listen to and share feelings and experiences with their children is likely to promote child disclosure (Vieno et al., 2009), we conclude that parents should combine behavioral control with parental warmth/responsiveness, as described in the concept of authoritative parenting (Pinquart & Lauk, 2025). The meta-analysis by Allen et al. (2016) indicates that parenting interventions are effective at preventing and decreasing substance use, although it needs to be tested which role increases in parental control/monitoring play for these effects.

With regard to future research, randomized controlled trials are recommended for testing the causal effects of intervention-induced changes in parental control/monitoring on change of substance use in the offspring. As substance-specific analyses were limited to alcohol, tobacco, and marijuana, we recommend research on associations of parenting with other substances. Extending the work of Pelham et al. (2024, 2025), more research is also recommended on mediators of the effects of behavioral control, parental knowledge, solicitation, and child disclosure on substance use in the offspring.

Declaration of interest

The authors have no conflicts to declare.

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Data availability statement

Selected characteristics of the included studies are available in the electronic supplement.

References

Albert, D., & Steinberg, L. (2011). Judgment and decision making in adolescence. *Journal of Research on Adolescence*, *21*(1), 211–224. https://doi.org/10.1111/j.1532-7795.2010.00724

Allen, M. L., Garcia-Huidobro, D., Porta, C., Curran, D., Patel, R., Miller, J., & Borowsky, I. (2016). Effective parenting interventions to reduce youth substance use: A systematic review. *Pediatrics*, *138*(2), e20154425. https://doi.org/10.1542/peds.2015-4425

Ballester, L., Amer, J., Sánchez-Prieto, L., & Valero de Vicente, M. (2021). Universal family drug prevention programs. A systematic review. *Journal of Evidence-Based Social Work (2019)*, *18*(2), 192–213. https://doi.org/10.1080/2640806

Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, *67*(6), 3296–3319. https://doi.org/10.1111/j.1467-8624.1996.tb01915.x

Cheung, W. L. (2014). Modeling dependent effect sizes with three-level meta-analyses: A structural equation modeling approach. *Psychological Methods*, *19*(2), 211–229. https://doi.org/10.1037/a0032968

Cohen, J. (1992). Quantitative methods in psychology: A power primer. *Psychological Bulletin*, *112*(1), 155–159. https://doi.org/10.1037/0033-2909.112.1.155

Delforterie, M. J., Verweij, K. J., Creemers, H. E., van Lier, P. A., Koot, H. M., Branje, S. J., & Huizink, A. C. (2016). Parental solicitation, parental control, child disclosure, and substance use: Native and immigrant Dutch adolescents. *Ethnicity & Health*, *21*(6), 535–550. https://doi.org/10.1080/13557858.2015.1126562

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, *56*(2), 455–463. https://doi.org/10.1111/j.0006-341X.2000.00455.x

Gilligan, C. (1982). *In a different voice*. Harvard University Press.

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives*, *3*(3), 165–170. https://doi.org/10.1111/j.1750-8606.2009.00099.x

Hall, W. D., Patton, G., Stockings, E., Weier, M., Lynskey, M., Morley, K. I., & Degenhardt, L. (2016). Why young people's substance use matters for global health. *The Lancet. Psychiatry*, *3*(3), 265–279. https://doi.org/10.1016/S2215-0366(16)00013-4

Hardie, B. (2022). What do parents do? Towards conceptual clarity in the study of parental influence on adolescent developmental and behavioural outcomes. *New Ideas in Psychology*, *66*, 100936. https://doi.org/10.1016/j.newideapsych.2022.100936

Hong, Q. N., Gonzalez-Reyes, A., & Pluye, P. (2018). Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the Mixed Methods Appraisal Tool (MMAT). *Journal of Evaluation in Clinical Practice*, *24*(3), 459–467. https://doi.org/10.1111/jep.12884

Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2022). Monitoring the future national survey results on drug use, 1975-2021: Overview, key findings on adolescent drug use. Institute for Social Research, University of Michigan.

Kerr, M., Stattin, H., & Burk, W. J. (2010). A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence*, *20*(1), 39–64. https://doi.org/10.1111/j.1532-7795.2009.00623.x

Lac, A., & Crano, W. D. (2009). Monitoring matters: Meta-analytic review reveals the reliable linkage of parental monitoring with adolescent marijuana use. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *4*(6), 578–586. https://doi.org/10.1111/j.1745-6924.2009.01166.x

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Sage.

Liu, D., Chen, D., & Brown, B. B. (2020). Do parenting practices and child disclosure predict parental knowledge? A meta-analysis. *Journal of Youth and Adolescence*, *49*(1), 1–16. https://doi.org/10.1007/s10964-019-01154-4

Mak, H. W., Russell, M. A., Lanza, S. T., Feinberg, M. E., & Fosco, G. M. (2020). Age-varying associations of parental knowledge and antisocial peer behavior with adolescent substance use. *Developmental Psychology*, *56*(2), 298–311. https://doi.org/10.1037/dev0000866

Nath, A., Choudhari, S. G., Dakhode, S. U., Rannaware, A., Gaidhane, A. M., Dakhode, S., & Gaidhane, A. (2022). Substance abuse amongst adolescents: An issue of public health significance. *Cureus*, *14*(11), e31193. https://doi.org/10.7759/cureus.31193

Pelham, W. E., Patel, H., Somers, J. A., & Racz, S. J. (2025). Theory for how parental monitoring changes youth behavior. *Clinical Psychological Science: A Journal of the Association for Psychological Science*, *13*(1), 18–42. https://doi.org/10.1177/21677026241232926

Pelham, W. E., Tapert, S. F., Gonzalez, M. R., Ahiarakwe, U., Patel, H., Davis, I. S., Meruelo, A. D., Van Rinsveld, A. M., Marshall, A. T., Dick, A. S., Guillaume, M., Dowling, G. J., Baskin-Sommers, A., & Brown, S. A. (2024). How does parental monitoring reduce adolescent substance use? Preliminary tests of two potential mechanisms. *Journal of Studies on Alcohol and Drugs*, *85*(3), 389–394. https://doi.org/10.15288/jsad.23-00297

Pinquart, M., & Lauk, J. (2025). Associations of parenting styles with substance use in the offspring-A systematic review and meta-analysis. *Drug and Alcohol Review*, *44*(1), 133–143. https://doi.org/10.1111/dar.13961

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin*, *86*(3), 638–641. https://doi.org/10.1037/0033-2909.86.3.638

Ryan, S. M., Jorm, A. F., & Lubman, D. I. (2010). Parenting factors associated with reduced adolescent alcohol use: A systematic review of longitudinal studies. *The Australian and New Zealand Journal of Psychiatry*, *44*(9), 774–783. https://doi.org/10.1080/00048674201O.501759

Schwartz, R. H., & Voth, E. A. (2003). The use and toxicity of cannabis in teenagers. In T. J. David (Ed.), *Recent Advances in Paediatrics.* (vol. 21, pp. 131–144). Royal Society of Medicine Press.

Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development*, *71*(4), 1072–1085. https://doi.org/10.1111/1467-8624.00210

Tomcikova, Z., Veselska, Z., Geckova, A. M., Van Dijk, J. P., & Reijneveld, S. A. (2013). Leisure time activities, parental monitoring and drunkenness in adolescents. *European Addiction Research*, *19*(3), 141–145. https://doi.org/10.1159/000343484

Viechtbauer, W. (2024, March 28). *Package 'metafor' Version 4.6-0*. https://cran.r-project.org/web/packages/metafor/metafor.pdf

Vieno, A., Nation, M., Pastore, M., & Santinello, M. (2009). Parenting and antisocial behavior: A model of the relationship between adolescent self-disclosure, parental closeness, parental control, and adolescent antisocial behavior. *Developmental Psychology*, *45*(6), 1509–1519. https://doi.org/10.1037/a0016929

Wang, Y. H., Tian, L., & Huebner, E. S. (2019). Parental control and Chinese adolescent smoking and drinking: The mediating role of refusal self-efficacy and the moderating role of sensation seeking. *Children and Youth Services Review*, *102*, 63–72. https://doi.org/10.1016/j.childyouth.2019.05.001

Watts, L. L., Hamza, E. A., Bedewy, D. A., & Moustafa, A. A. (2024). A meta-analysis study on peer influence and adolescent substance use. *Current Psychology*, *43*(5), 3866–3881. https://doi.org/10.1007/s12144-023-04944-z

Yap, M. B., Cheong, T. W., Zaravinos-Tsakos, F., Lubman, D. I., & Jorm, A. F. (2017). Modifiable parenting factors associated with adolescent alcohol misuse: A systematic review and meta-analysis of longitudinal studies. *Addiction (Abingdon, England)*, *112*(7), 1142–1162. https://doi.org/10.1111/add.13785