Appendix

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Table S1. Description of search strategy in all included electronic databases

Medline
(((((parent*).ti,ab OR (mother*).ti,ab OR (father*).ti,ab OR exp PARENTING/ OR exp PARENTS/) AND ((child*).ti,ab OR (underage*).ti,ab OR (youth*).ti,ab OR (daughter*).ti,ab OR exp ADOLESCENT/ OR (adolescen*).ti,ab OR (son).ti,ab OR (sons).ti,ab OR (teen).ti,ab OR (teens).ti,ab OR (teenage*).ti,ab OR (young*).ti,ab)) AND ((alcohol*).ti,ab OR (drunk*).ti,ab OR exp BINGE DRINKING/ OR exp ALCOHOL DRINKING/ OR exp ALCOHOLIC INTOXICATION/ OR (drink*).ti,ab OR ("binge drink*").ti,ab OR (intoxicat*).ti,ab)) AND ((norm*).ti,ab OR ((attitude*).ti,ab OR exp ATTITUDE/ OR (approv*).ti,ab OR (disapprov*).ti,ab))

PsycINFO
(((((parent*).ti,ab OR (mother*).ti,ab OR (father*).ti,ab OR exp PARENTING/ OR exp PARENTS/) AND ((child*).ti,ab OR (underage*).ti,ab OR (youth*).ti,ab OR (daughter*).ti,ab OR (adolescen*).ti,ab OR (son).ti,ab OR (sons).ti,ab OR (teen).ti,ab OR (teens).ti,ab OR (teenage*).ti,ab OR (young*).ti,ab)) AND ((alcohol*).ti,ab OR (drunk*).ti,ab OR exp BINGE DRINKING/ OR exp ALCOHOL INTOXICATION/ OR exp UNDERAGE DRINKING/ OR (drink*).ti,ab OR ("binge drink*").ti,ab OR (intoxicat*).ti,ab)) AND ((attitude*).ti,ab OR exp ATTITUDES/ OR (approv*).ti,ab OR (disapprov*).ti,ab OR (norm*).ti,ab)

EMBASE
(((((parent*).ti,ab OR (mother*).ti,ab OR (father*).ti,ab OR exp PARENT/) AND ((child*).ti,ab OR (underage*).ti,ab OR (youth*).ti,ab OR (daughter*).ti,ab OR (adolescen*).ti,ab OR (son).ti,ab OR (sons).ti,ab OR (teen).ti,ab OR (teens).ti,ab OR (teenage*).ti,ab OR (young*).ti,ab OR exp ADOLESCENT/)) AND ((alcohol*).ti,ab OR (drunk*).ti,ab OR exp BINGE DRINKING/ OR exp DRINKING/ OR exp ALCOHOL INTOXICATION/ OR (drink*).ti,ab OR ("binge drink*").ti,ab OR (intoxicat*).ti,ab OR ("heavy episodic drinking").ti,ab)) AND ((norm*).ti,ab OR ((attitude*).ti,ab OR exp ATTITUDE/ OR (approv*).ti,ab OR (disapprov*).ti,ab))

Scopus
(TITLE-ABS-KEY("alcohol*" OR "binge drink*" OR "drunk*" OR "drink*" OR "intoxicat*")) AND (TITLE-ABS-KEY("parent*" OR "mother*" OR "father*")) AND (TITLE-ABS-KEY("teen" OR "teens" OR "teenage*" OR "child*" OR "underage*" OR "youth*" OR "young*" OR "son" OR "sons" OR "daughter*" OR "adolescen*")) AND (TITLE-ABS-KEY("attitude*" OR "approv*" OR "disapprov*" OR "norm*"))

Web of Science
TS=(alcohol* OR binge drink* OR drunk* OR intoxicat* OR drink*) AND TS=(parent* OR mother* OR father*) AND TS=("teen" OR "teens" OR teenage* OR child* OR underage* OR youth* OR "son" OR "sons" OR daughter* OR adolescen* OR young*) AND TS=(attitude* OR approv* OR disapprov* OR norm*) Refined By: [excluding]: Databases: (KJD OR MEDLINE OR DIIDW OR ZOOREC)

Table S2. Participants' age (final assessment) used in meta-regression

Study	Age at baseline	Age at the (final) assessment
Aas *et al*. 1996	13.3	13 (baseline)
Brody *et al*. 2000	10–12	13 (24 months)
Colder *et al*. 2018	12	19 (seven years)
Ennett *et al*. 2001	13.6 (12–14)	15 (12 months)
Gerrard *et al*. 2000 (H)	16 (15/17)	17 (12 months)
Gerrard *et al*. 2000 (L)	16 (15/17)	17 (12 months)
Glatz *et al*. 2012	13.54 (13–14)	16 (24 months)
Järvinen & Østergaard 2009	15	15 (baseline)
Kerr *et al*. 2012	7	13 (72 months)
Koning *et al*. 2010b	12.2 (11–14)	14 (22 months)
Margulies *et al*. 1977	14–18	16 (5–6 months)
Mares *et al*. 2011 (F-O)	15.22	18 (36 months)
Mares *et al*. 2011 (M-Y)	13.36	16 (36 months)
Murphy *et al*. 2016	17	17 (baseline)
Özdemir & Koutakis 2016	12–13	14 (18 months)
Özdemir & Koutakis 2016	12–13	14 (18 months)
Peterson et al. 1994	12–13	14 (24 months)
Pettersson *et al*. 2011	13	15 (27 months)
Sieving *et al*. 2000 (C)	12	13 (12 months)
Sieving *et al*. 2000 (I)	12	13 (12 months)
Strandberg *et al*. 2014 (B)	13	15 (30 months)
Strandberg *et al*. 2014 (G)	13	15 (30 months)
Van der Vorst *et al*. 2006 (F-O)	15.22	16 (12 months)
Van der Vorst *et al*. 2006 (M-Y)	13.36	14 (12 months)
Yu 2003	15–18	16 (baseline)

H – high self-esteem, L – low self-esteem, F-O – fathers-older children, M-Y – mothers-younger children, C – control, I – intervention, B – boys, G – girls

Table S3. Methodological quality assessment of included studies

Study	Study participation				Study attrition			Predictor measurement			Outcome measurement		Confounding measurement	Analysis				Number of biases
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
Aas *et al.* 1996	±	-	?	+	NA	NA	NA	+	?	?	±	±	-	+	±	+	+	4
Andrews *et al.* 1993	±	+	-	+	+	±	-	±	+	?	±	?	+	+	+	+	±	3
Ary *et al.* 1993	±	+	±	±	?	-	?	+	+	±	±	?	±	+	+	+	+	3
Brody *et al.* 2000	±	+	+	±	?	-	-	±	+	±	±	±	-	+	+	+	+	3
Colder *et al.* 2018	+	+	+	-	+	-	?	±	?	?	±	?	+	+	+	+	+	3
Donovan & Molina 2008	+	+	±	+	NA	NA	NA	±	+	±	±	?	±	+	+	+	+	2
Donovan & Molina 2011	+	+	±	+	+	±	±	±	+	±	+	±	+	+	+	+	+	0
Donovan & Molina 2014	+	+	±	+	+	±	+	±	+	±	+	?	+	+	+	+	+	1
Ennett *et al.* 2001	-	-	+	+	+	±	±	+	+	?	+	?	+	+	+	+	+	2
Gerrard *et al.* 2000	±	+	?	±	±	-	?	±	+	?	±	±	-	+	+	+	+	5
Glatz *et al.* 2012	+	+	?	±	-	±	±	+	±	?	±	?	±	+	±	±	+	4
Jackson *et al.* 2012	±	+	-	±	NA	NA	NA	+	+	±	+	?	+	±	+	+	±	2
Järvinen & Østergaard 2009	+	±	+	-	NA	NA	NA	+	+	?	+	?	-	+	±	±	-	3
Kerr *et al.* 2012	±	+	-	+	?	?	?	+	+	?	±	±	±	+	±	+	±	3
Koning *et a*l. 2010a	+	-	+	+	NA	NA	NA	±	+	±	+	±	+	+	+	+	+	0
Koning *et al.* 2010b	+	+	±	±	+	±	±	±	+	±	+	?	±	+	+	+	+	2
Koning *et al.* 2012	+	+	±	+	±	-	?	±	+	±	+	?	+	+	+	+	±	2
Koning *et al.* 2013	±	-	?	±	-	±	±	±	+	±	+	?	±	+	+	+	±	4
Mares *et al.* 2011	±	+	?	±	+	±	±	±	+	±	±	?	±	+	+	+	+	3
Margulies *et al.* 1977	±	-	?	±	-	-	?	-	?	?	±	?	+	±	+	+	+	4
Murphy *et al.* 2016	±	±	±	+	NA	NA	NA	+	+	?	+	+	+	+	±	+	+	0
Needle *et al.* 1986	±	+	+	+	NA	NA	NA	-	?	?	±	+	±	+	+	+	±	2
Özdemir & Koutakis 2016	-	-	?	-	+	-	±	±	+	?	+	?	-	+	+	+	+	4
Peterson *et al.* 1994	±	-	-	±	-	±	-	+	+	?	+	?	+	+	+	+	+	3
Pettersson *et al.* 2011	±	±	?	-	±	±	-	+	+	?	+	?	±	±	+	+	±	4
Sieving *et al.* 2000	±	-	?	±	?	-	?	±	?	?	±	?	±	+	+	+	+	5
Strandberg *et al.* 2014	±	+	±	±	+	+	-	±	+	?	+	?	+	+	+	+	+	2
Van der Vorst *et al.* 2006	±	+	?	+	+	-	?	±	+	±	±	?	±	+	+	+	±	3
Yu 2003	±	±	±	+	NA	NA	NA	+	+	?	+	?	+	+	+	+	+	1

Funnel Plot of Standard Error by Log odds ratio
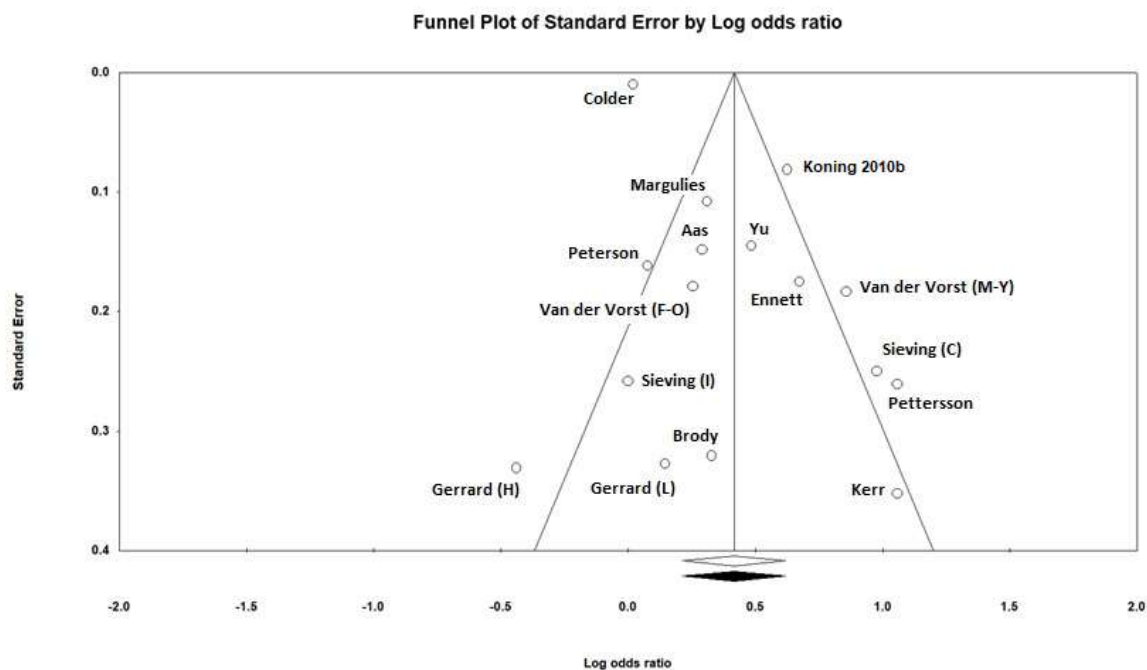
F-O – fathers-older children, M-Y – mothers-younger children, C – control, I – intervention, H – high self-esteem, L – low self-esteem

Figure S1. Funnel plot of standard error by log odds ratio for alcohol use frequency.

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Andrews, 1993	1.300	1.141	1.481	3.940	0.000
Donovan, 2014	2.370	1.377	4.080	3.113	0.002
	1.653	0.929	2.941	1.708	0.088

Figure S2. Forest plot for meta-analysis of children's perception of parental attitudes towards children's alcohol use and children's alcohol use initiation.

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Aas, 1996	2.180	1.696	2.801	6.090	0.000
Gerrard, 2000 (H)	2.551	1.312	4.960	2.761	0.006
Gerrard, 2000 (L)	2.180	1.131	4.199	2.329	0.020
Margulies, 1977	1.217	1.035	1.431	2.374	0.018
Needle, 1986 (WS)	1.075	0.666	1.735	0.297	0.766
Needle, 1986 (WOS)	1.440	0.850	2.438	1.356	0.175
Yu, 2003	2.562	1.915	3.427	6.335	0.000
	1.761	1.292	2.402	3.578	0.000

H – high self-esteem, L – low self-esteem, WS – with older sibling(s), WOS – without older sibling(s)

Figure S3. Forest plot for meta-analysis of children's perception of parental attitudes towards children's alcohol use and children's alcohol use frequency.

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Aas, 1996 (B-F)	0.200	0.096	0.300	3.738	0.000
Aas, 1996 (G-M)	0.180	0.059	0.296	2.895	0.004
Ary, 1993	0.400	0.267	0.518	5.524	0.000
Gerrard, 2000 (H)	0.060	-0.117	0.233	0.664	0.507
Gerrard, 2000 (L)	0.380	0.220	0.520	4.437	0.000
Yu, 2003	0.357	0.285	0.425	9.071	0.000
	0.269	0.169	0.364	5.114	0.000

Statistics for each study — *Correlation and 95% CI*

Restrictive — Lenient (−1.00 −0.50 0.00 0.50 1.00)

B-F – boys and fathers, G-M – girls and mothers, H – high self-esteem, L – low self-esteem

Figure S4. Forest plot for meta-analysis of children's perception of parental attitudes towards children's alcohol use and parental attitudes reported by parents.

Group by Design	Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Cross-sectional	Aas, 1996	1.338	1.000	1.789	1.963	0.050
Cross-sectional	Gerrard, 2000 (H)	0.775	0.407	1.478	-0.773	0.439
Cross-sectional	Gerrard, 2000 (L)	1.550	0.813	2.957	1.331	0.183
Cross-sectional	Koning, 2010a	2.452	2.124	2.831	12.228	0.000
Cross-sectional	Van der Vorst, 2006 (F-O)	1.338	0.947	1.891	1.649	0.099
Cross-sectional	Van der Vorst, 2006 (M-Y)	3.129	2.180	4.492	6.185	0.000
Cross-sectional	Yu, 2003	1.621	1.220	2.154	3.329	0.001
Cross-sectional		1.675	1.238	2.267	3.344	0.001
Longitudinal	Brody, 2000	1.388	0.740	2.602	1.022	0.307
Longitudinal	Colder, 2018	1.020	1.000	1.040	1.979	0.048
Longitudinal	Ennett, 2001	1.960	1.391	2.762	3.846	0.000
Longitudinal	Kerr, 2012	2.881	1.444	5.747	3.003	0.003
Longitudinal	Margulies, 1977	1.363	1.103	1.684	2.869	0.004
Longitudinal	Peterson, 1994	1.080	0.787	1.483	0.476	0.634
Longitudinal	Pettersson, 2011	2.656	1.627	4.334	3.909	0.000
Longitudinal	Sieving, 2000 (C)	2.881	1.728	4.802	4.058	0.000
Longitudinal	Sieving, 2000 (I)	1.000	0.603	1.660	0.000	1.000
Longitudinal		1.567	1.199	2.047	3.294	0.001
Overall		1.613	1.321	1.971	4.683	0.000

Statistics for each study — *Odds ratio and 95% CI*

Restrictive — Lenient (0.01 0.1 1 10)

H – high self-esteem, L – low self-esteem, F-O – fathers-older children, M-Y – mothers-younger children, C – control, I – intervention

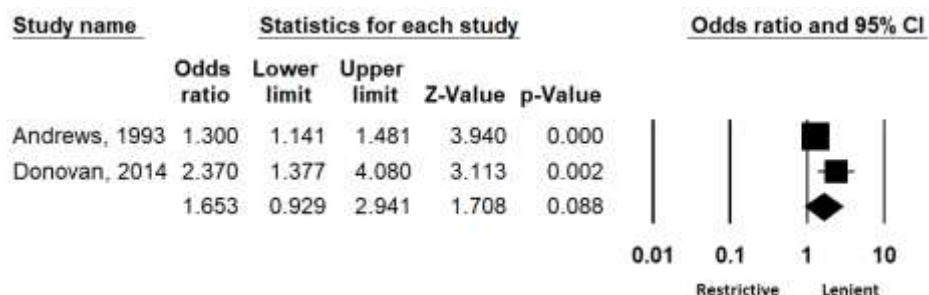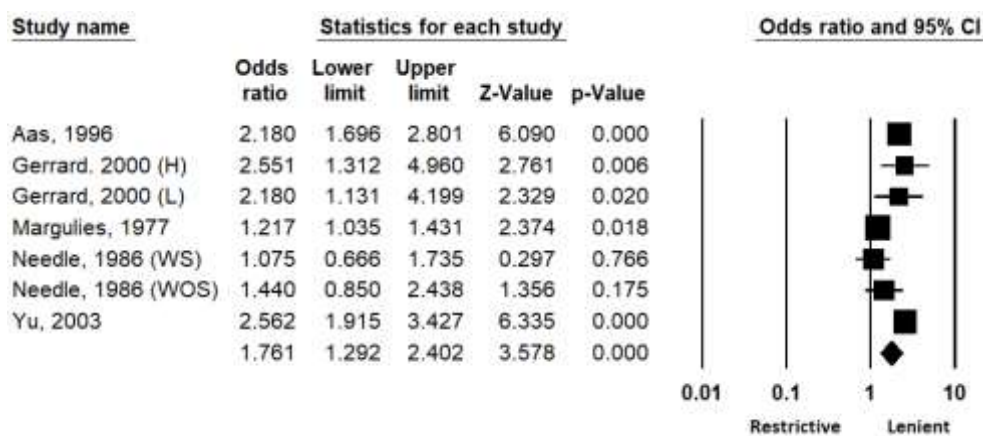**Figure S5.** Forest plot for meta-analysis of parental attitudes towards children's alcohol use and children's alcohol use frequency by study design.

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Group by Sample size	Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Below 500	Brody, 2000	1.388	0.740	2.602	1.022	0.307
Below 500	Ennett, 2001	1.960	1.391	2.762	3.846	0.000
Below 500	Gerrard, 2000 (H)	0.645	0.337	1.234	-1.325	0.185
Below 500	Gerrard, 2000 (L)	1.156	0.609	2.196	0.444	0.657
Below 500	Kerr, 2012	2.881	1.444	5.747	3.003	0.003
Below 500	Peterson, 1994	1.080	0.787	1.483	0.476	0.634
Below 500	Pettersson, 2011	2.656	1.627	4.334	3.909	0.000
Below 500	Sieving, 2000 (C)	2.881	1.728	4.802	4.058	0.000
Below 500	Sieving, 2000 (I)	1.000	0.603	1.660	0.000	1.000
Below 500	Van der Vorst, 2006 (F-O)	1.290	0.908	1.832	1.423	0.155
Below 500	Van der Vorst, 2006 (M-Y)	2.357	1.645	3.376	4.674	0.000
Below 500		1.586	1.212	2.077	3.356	0.001
Over 500	Aas, 1996	1.338	1.000	1.789	1.963	0.050
Over 500	Colder, 2018	1.020	1.000	1.040	1.979	0.048
Over 500	Koning, 2010b	1.870	1.594	2.193	7.693	0.000
Over 500	Margulies, 1977	1.363	1.103	1.684	2.869	0.004
Over 500	Yu, 2003	1.621	1.220	2.154	3.329	0.001
Over 500		1.405	1.037	1.904	2.195	0.028
Overall		1.504	1.229	1.840	3.967	0.000

Odds ratio and 95% CI — 0.01 0.1 1 10 — Restrictive Lenient

H – high self-esteem, L – low self-esteem, C – control, I – intervention, F-O – fathers-older children, M-Y – mothers-younger children

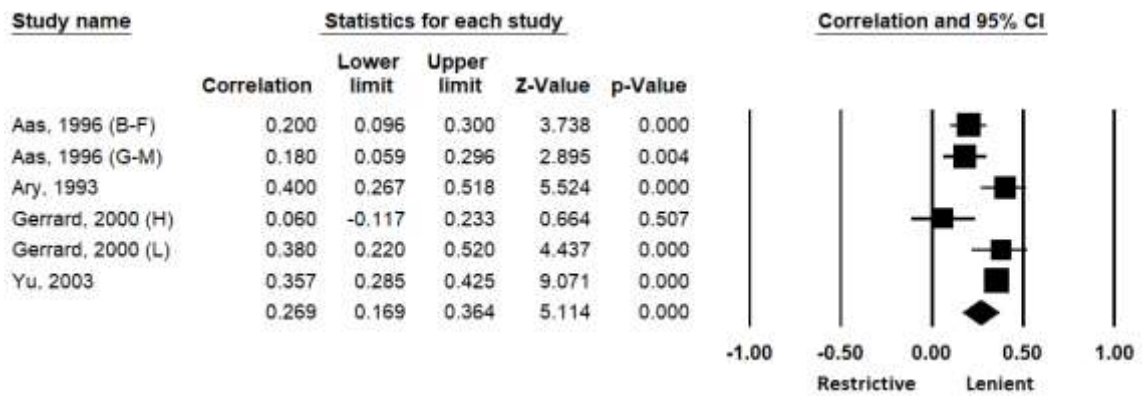**Figure S6.** Forest plot for meta-analysis of parental attitudes towards children's alcohol use and children's alcohol use frequency by sample size.

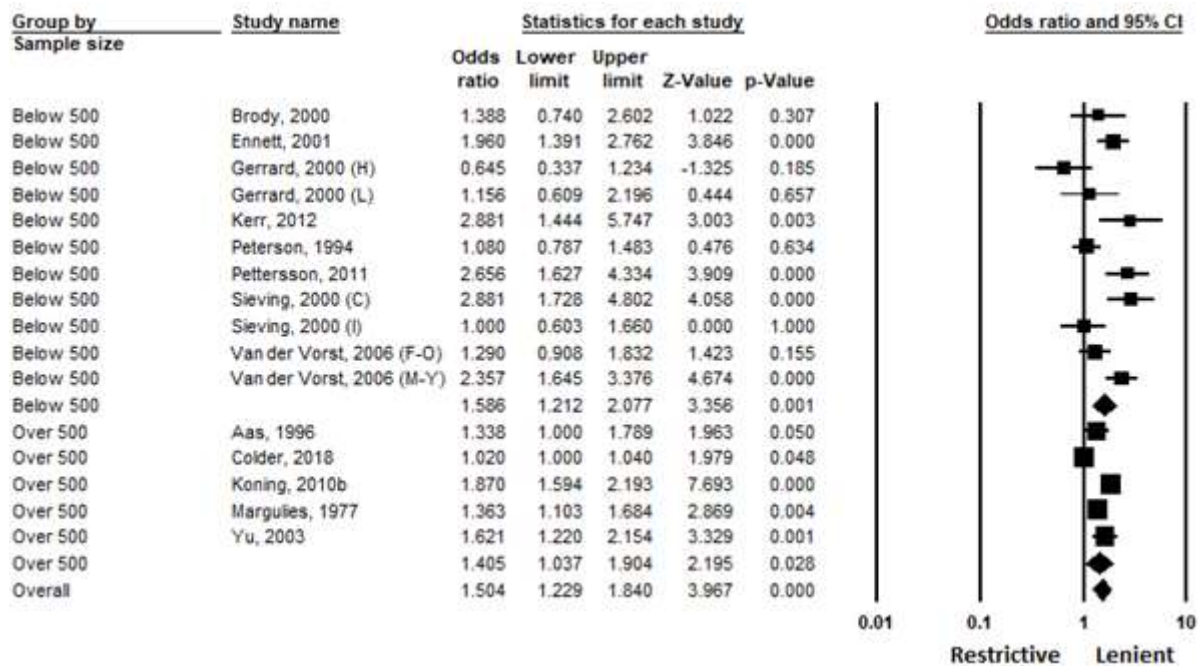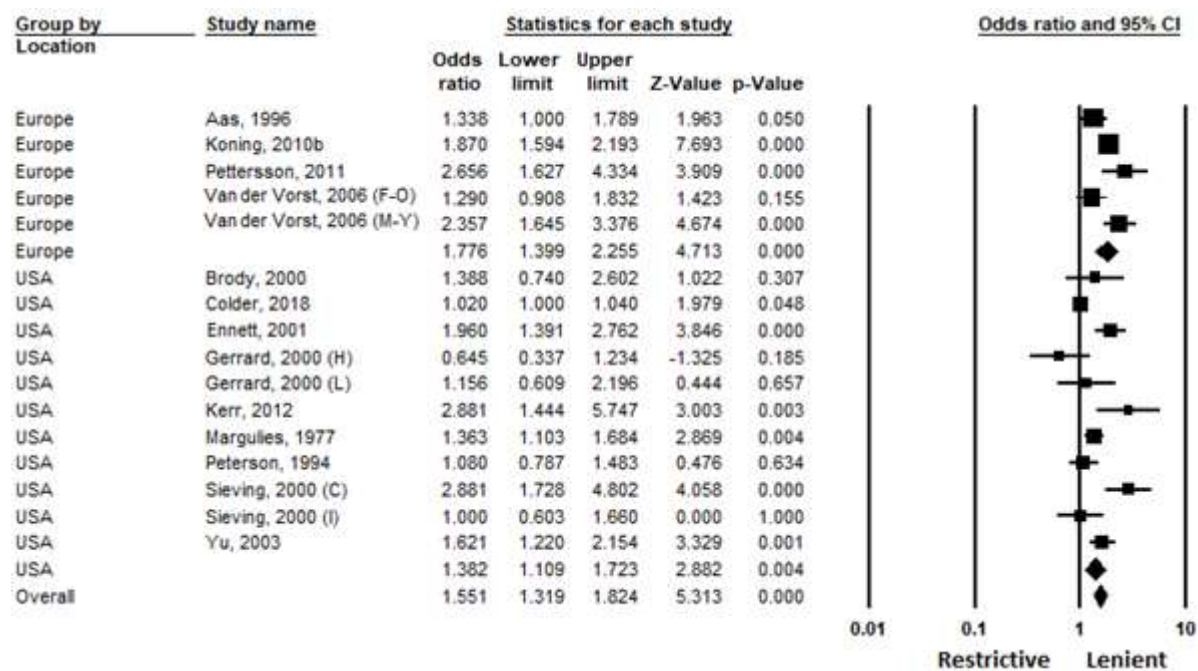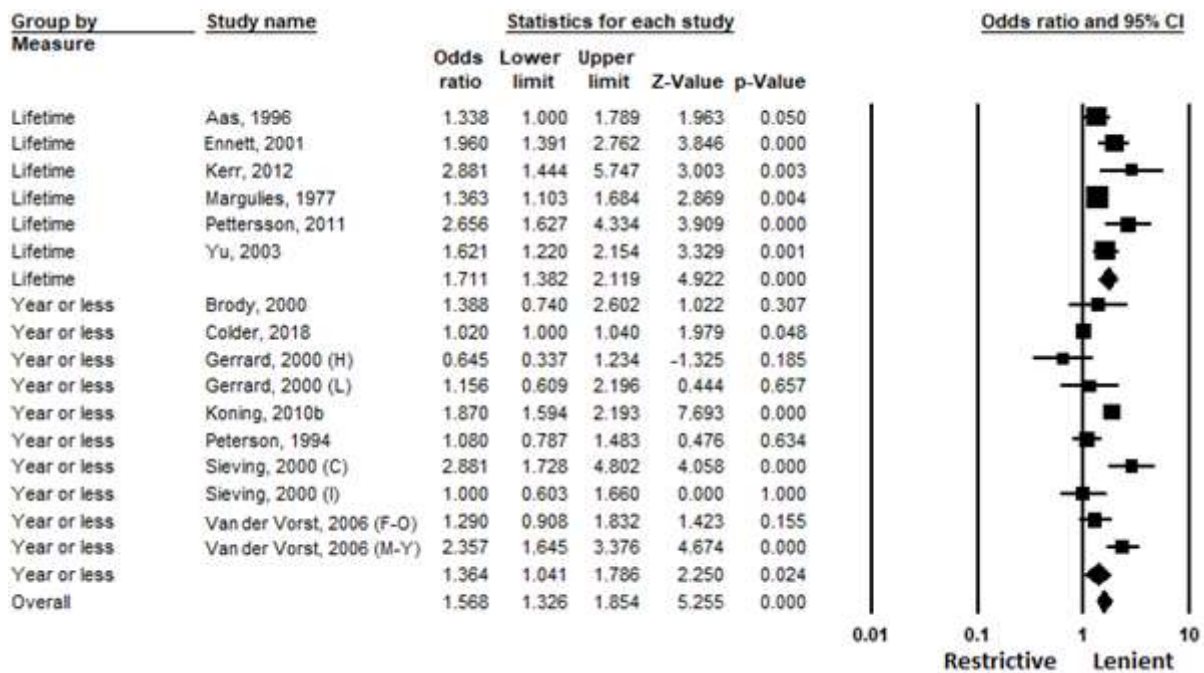| Group by Location	Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Europe	Aas, 1996	1.338	1.000	1.789	1.963	0.050
Europe	Koning, 2010b	1.870	1.594	2.193	7.693	0.000
Europe	Pettersson, 2011	2.656	1.627	4.334	3.909	0.000
Europe	Van der Vorst, 2006 (F-O)	1.290	0.908	1.832	1.423	0.155
Europe	Van der Vorst, 2006 (M-Y)	2.357	1.645	3.376	4.674	0.000
Europe		1.776	1.399	2.255	4.713	0.000
USA	Brody, 2000	1.388	0.740	2.602	1.022	0.307
USA	Colder, 2018	1.020	1.000	1.040	1.979	0.048
USA	Ennett, 2001	1.960	1.391	2.762	3.846	0.000
USA	Gerrard, 2000 (H)	0.645	0.337	1.234	-1.325	0.185
USA	Gerrard, 2000 (L)	1.156	0.609	2.196	0.444	0.657
USA	Kerr, 2012	2.881	1.444	5.747	3.003	0.003
USA	Margulies, 1977	1.363	1.103	1.684	2.869	0.004
USA	Peterson, 1994	1.080	0.787	1.483	0.476	0.634
USA	Sieving, 2000 (C)	2.881	1.728	4.802	4.058	0.000
USA	Sieving, 2000 (I)	1.000	0.603	1.660	0.000	1.000
USA	Yu, 2003	1.621	1.220	2.154	3.329	0.001
USA		1.382	1.109	1.723	2.882	0.004
Overall		1.551	1.319	1.824	5.313	0.000

Odds ratio and 95% CI — 0.01 0.1 1 10 — Restrictive Lenient

F-O – fathers-older children, M-Y – mothers-younger children, H – high self-esteem, L – low self-esteem, C – control, I – intervention

Figure S7. Forest plot for meta-analysis of parental attitudes towards children's alcohol use and children's alcohol use frequency by study location.

Group by Measure	Study name	Statistics for each study					Odds ratio and 95% CI
		Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Lifetime	Aas, 1996	1.338	1.000	1.789	1.963	0.050	
Lifetime	Ennett, 2001	1.960	1.391	2.762	3.846	0.000	
Lifetime	Kerr, 2012	2.881	1.444	5.747	3.003	0.003	
Lifetime	Margulies, 1977	1.363	1.103	1.684	2.869	0.004	
Lifetime	Pettersson, 2011	2.656	1.627	4.334	3.909	0.000	
Lifetime	Yu, 2003	1.621	1.220	2.154	3.329	0.001	
Lifetime		1.711	1.382	2.119	4.922	0.000	
Year or less	Brody, 2000	1.388	0.740	2.602	1.022	0.307	
Year or less	Colder, 2018	1.020	1.000	1.040	1.979	0.048	
Year or less	Gerrard, 2000 (H)	0.645	0.337	1.234	-1.325	0.185	
Year or less	Gerrard, 2000 (L)	1.156	0.609	2.196	0.444	0.657	
Year or less	Koning, 2010b	1.870	1.594	2.193	7.693	0.000	
Year or less	Peterson, 1994	1.080	0.787	1.483	0.476	0.634	
Year or less	Sieving, 2000 (C)	2.881	1.728	4.802	4.058	0.000	
Year or less	Sieving, 2000 (I)	1.000	0.603	1.660	0.000	1.000	
Year or less	Van der Vorst, 2006 (F-O)	1.290	0.908	1.832	1.423	0.155	
Year or less	Van der Vorst, 2006 (M-Y)	2.357	1.645	3.376	4.674	0.000	
Year or less		1.364	1.041	1.786	2.250	0.024	
Overall		1.568	1.326	1.854	5.255	0.000	

H – high self-esteem, L – low self-esteem, C – control, I – intervention, F-O – fathers-older children, M-Y – mothers-younger children

Figure S8. Forest plot for meta-analysis of parental attitudes towards children's alcohol use and children's alcohol use frequency by frequency (lifetime vs last year).
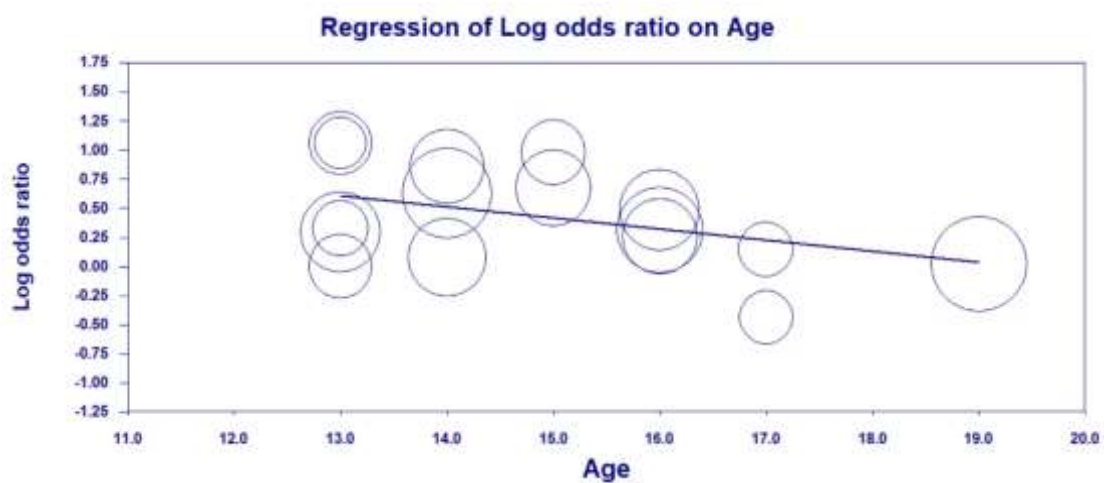

Figure S9. Meta-regression of the effect of age on the association between parental attitudes and alcohol use frequency across studies
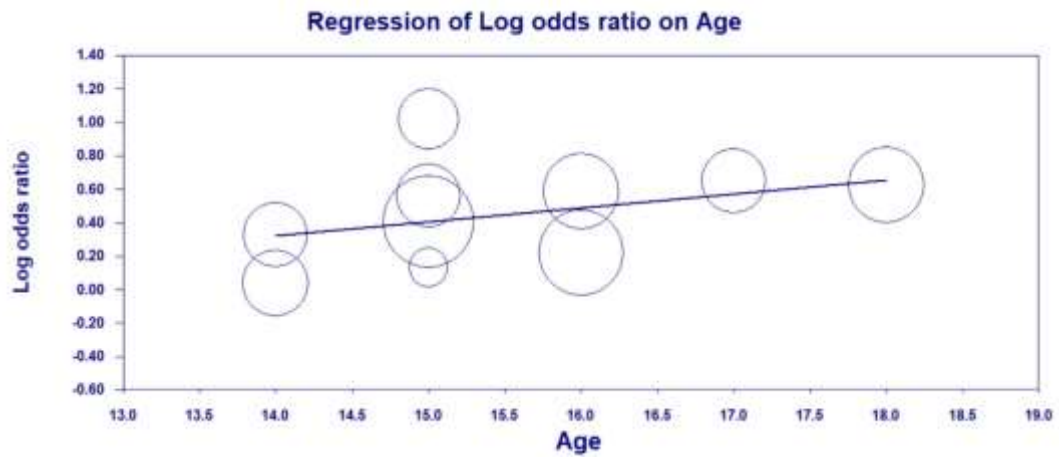
Figure S10. Meta-regression of the effect of age on the association between parental attitudes and drunkenness across studies