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Articles

Twenty years of emotional-behavioural problems in clinical and at-risk adolescents living in Italy assessed through the Achenbach System of Empirically Based Assessment: systematic review and meta-analysis

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Abstract

Background: The current systematic review and meta-analysis aims to synthesize findings from Italian studies that have investigated emotional and behavioural problems in clinical and at-risk samples of adolescents, as assessed by the Achenbach System of Empirically Based Assessment (ASEBA) instruments, including Child Behaviour Checklist (CBCL), the self-report Youth Self Report (YSR) and the teacher-report Teacher Report Form (TRF). It also investigates possible effects of gender, age, and time of assessment (pre-post COVID-19 pandemic), and their link with other psychological factors.

Methods: The latest PRISMA guidelines were followed, and this study was registered in PROSPERO (CRD42022299999). Scopus, EBSCO, PubMed, Web of Sciences, and ProQuest databases were used considering the time frame from January 2001 to November 2021. Two blinded investigators remove duplicates and double screened 7103 records. They selected and extract information from 40 eligible studies, which were also evaluated through the Newcastle-Ottawa Scale.

Results: Overall, emotional-behavioural problems were mainly investigated through the CBCL 6-18 both in clinical samples (N = 2244), mostly composed of adolescents with a diagnosis of eating disorders and externalized disorders, and at-risk samples (N = 868), mostly of adolescents with a medical condition. As expected, adolescents from clinical samples had higher scores on the ASEBA scales than their peers belonging to the at-risk samples. No effect related to gender, time of assessment and study quality on emotional behavioural problems emerged. However, a significant effect of age was found in clinical samples, specifically a decrease in externalizing symptoms with the increase of age. Lastly, emotional-behavioural problems were mainly investigated in association with emotional regulation difficulties both in clinical and at-risk samples.

Conclusions: For the first time, meta-analytic data on rates of emotional-behavioral problems in Italian clinical and at-risk adolescents are provided. Implications include the need of more data, especially with the TRF and from Centre e Southern Italy, to solve doubts emerged about the absence of moderators. The authors discuss limitations related to the heterogeneity of the studies, suggesting future research directions.

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Internalizing problems; Externalizing problems; Child Behaviour Checklist 6-18 (CBCL 6-18); Youth Self Report 11-18 (YSR 11-18); Systematic review; Clinical Psychology; Meta-analysis.

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1. Introduction

Over the last decade, the increase in emotional-behavioural problems in adolescents (Blomqvist et al., 2019) has prompted international organizations to call for the implementation of more research on adolescents' mental health, particularly those belonging to vulnerable groups (World Mental Health, 2013, 2017). According to literature (Anderson Moore, 2006; Farley, 2020; World Mental Health, 2017), vulnerable groups of adolescents include both *clinical* adolescents with mental health issues, *i.e.,* those with psychiatric diagnoses or developmental disorders (Arcelus and Vostanis, 2005; Schroeder et al., 2011), and adolescents *at-risk* for the onset of mental disorders, because of stressful conditions (Bastianoni et al., 2021; Fonseca et al., 2021; Martino et al., 2019). These refer to psychosocial difficulties (e.g., families with a low social-economic status, parental physical and/or mental disease, etc), physical impairments (e.g., chronic illnesses, etc), history-related adversities (e.g., exposure to adverse childhood experiences, living out-of-home, etc), environmental events (e.g., exposed to earthquakes, wars, etc) (Hasan e Nicolaidis, 2020; Ma et al., 2022; Mclean et al., 2016; Pace et al., 2022; Peverill et al., 2021; Rubens et al., 2018; Sieh et al., 2010).

In Italy, a quite dramatic picture of vulnerable adolescents comes up: 16.6% of Italian adolescents suffer from a mental disorder (UNICEF, 2021), 1.4 million minors live in conditions of absolute poverty (Istituto Nazionale di Statistica (ISTAT, 2021), more than 300.000 suffer for physical disabilities (ISTAT, 2021), more than 20.000 adolescents are placed in foster care and residential-care (Ministero del Lavoro e delle Politiche Sociali, 2019), and the high hydrogeological risk has exposed several children and adolescents to earthquakes and floods over the years (Picarazzi, 2018). Moreover, Italy has been strongly and for a long time affected by the COVID-19 pandemic, which had severe consequences in terms of worsened adolescents' quality of life (Auriemma and Ianaccone, 2020; De Giacomo et al., 2021).

The investigation of emotional-behavioural problems in clinical and at-risk adolescents aligns - in Italy as in the world- with the priorities established by WHO goals to increase the knowledge on mental health in vulnerable groups (WHO, 2017). This can help in prevention and intervention, with a possible reduction of marked social and sanitary spending in these groups (Tkacz and Brady, 2021; Ziebold et al., 2022).

As suggested by literature (Achenbach et al., 2016), possible reliable sources of information (Achenbach et al., 2016; Deckers et al., 2009; Janssens and Deboutte, 2009) about emotional-behavioural problems of clinical - except for cognitive delays (Embregts et al., 2000)- and at-risk samples are the ASEBA tools. Specifically, the parent-report questionnaire Child Behaviour Checklist (CBCL), the self-report Youth Self Report (YSR) and the teacher-report Teacher Report Form (TRF), of which the latest versions are dated 2001 (CBCL 6-18, YSR 11-18, TRF 6-18) (Achenbach and Rescorla, 2001). As fully detailed elsewhere (Achenbach and Rescorla, 2001), these questionnaires encompass several narrow-band scales, captured by three broad-band scales for Internalizing problems (sum of scores in narrow-band scales for anxiety, depression, and somatic complaints), Externalizing problems (sum of scores in narrow-band scales for aggressive and oppositive-defiant/delinquent behaviours) and Total problems (sum of all items included in each questionnaire).

International literature on emotional-behavioural problems in adolescents' vulnerable populations through ASEBA questionnaires suggests that this group -both in clinical (Philipp et al., 2018; Simeonova et al., 2015) and at-risk (Barroso et al., 2017; Bordin et al., 2013; Campos et al., 2019) conditions- tends to show more internalizing and externalizing problems than their community peers. However, very few studies with the ASEBA instruments compared clinical adolescents with referred mental issues with those defined at-risk for the conditions previously explained. Philipp et al. (Philipp et al., 2018) found that an at-risk group of socially disadvantaged school leavers showed subthreshold levels of emotional-behavioural problems which were not significantly different from those found in a clinically referred psychiatric sample. This suggests that at-risk samples may be worthy of a diagnosis for clinical levels of subthreshold symptoms, but they may not receive it as less prone to seek psychological support (Philipp et al., 2018). However, it is not empirically established whether clinical and at-risk groups may differ in terms of levels of emotional-behavioural problems (Gómez-Tabares et al., 2022; Machado et al., 2021; Salamanca-Camargo et al., 2021).

Moreover, large studies on community adolescents highlighted that emotional-behavioural symptoms can vary according to age and gender. Specifically, younger male adolescents manifest more externalizing problems, while older adolescents and females show more internalizing ones (Rescorla et al., 2012). However, these age and gender differences are less studied in clinical and at-risk groups, and few studies do not fully confirm these findings. For instance, an article (Biederman et al., 2020) on clinical adolescents with different mental health issues confirmed the age differences observed in community samples, as well as the presence of more externalizing problems in boys, while the higher levels of internalizing problems in girls have been not confirmed. Considering the at-risk samples, studies report contrasting results:

Some show age and gender differences like those observed in community samples concerning internalizing and externalizing problems (Campos et al., 2019; Erol et al., 2011), while other studies did not find more aggressive behaviours in institutionalized males compared to females and did not find these differences both with respect to internalizing and externalizing problems (Pace et al., 2018) or to specific scales (*e.g.*, Campos et al., 2019). Particularly, girls also showed significantly higher scores in attention and thought problems. This reflects a general picture where the role of age and gender on clinical and at-risk teenagers' emotional-behavioural problems needs to be further investigated (Carlén et al., 2022).

International literature also reports an increase in diagnoses of clinical adolescents (Tkacz and Brady, 2021), and increased mental health symptoms in at-risk adolescents in the last decades (Kim and Hagquist, 2018). However, there are limited studies focused on the trend of emotional-behavioural problems and the various types of symptoms - even subthreshold - in these groups. Moreover, adolescents' symptoms appear particularly increased after the COVID-19 pandemic outbreak (Theberath et al., 2022), but there is still no empirical investigation supporting this statement in clinical and at-risk adolescents, probably due to the contemporaneity of the event.

Furthermore, the presence of emotional-behavioural problems could be related to, or even impacted by, other adolescents' social, psychological, and developmental dimensions, and it could be useful to synthesize whether and how this occurs in clinical and at-risk populations, by also highlighting current trends of research and eventual lines scarcely explored.

These issues put a strain on the mental health of professionals working with clinical and high-risk adolescents around the world. Therefore, this calls for empirical contributions that consider the impact of these multiple variables.

Particularly in Italy, where there is fragmented information on the distribution and entity of emotional-behavioural problems in vulnerable adolescents, an updated and comprehensive picture of the emotional-behavioural problems of clinical and at-risk adolescents is missing, despite the large number in this Country. Therefore, a synthesis of current knowledge on emotional-behavioural problems of clinical and at-risk adolescents, inclusive of the information on the impact of gender, age, increase over time, especially after the pandemic, and relationships with other outcomes could help Italian practitioners in orientating their assessment and intervention in these populations. To ensure the goodness of synthetic results, scientific guidelines recommend checking the effect of the study quality as well (Page et al., 2021). Moreover, this type of synthesis could contribute to the current international literature on the topic by providing Italian data to eventually compare with ones of other countries.

This contribution is the second part of a systematic review of studies on emotional-behavioural symptoms of clinical and at-risk adolescents living in Italy, as assessed through the versions of the ASEBA questionnaires released in 2001. The first report of the systematic review focused on emotional-behavioural symptoms of low-risk community adolescents living in Italy.

1.1 Objectives

Specifically, separately for clinical and at-risk pooled adolescent populations living in Italy, this systematic review aims to answer the following research questions:

RQ1) What are the pooled mean scores of at-risk and clinical Italian adolescents' emotional-behavioural problems - in terms of total, externalizing, internalizing problems, and specific scales- assessed through ASEBA? Are there differences between clinical and at-risk pooled adolescent populations?

RQ2) Do these scores vary according to socio-demographic (*i.e.*, gender and age) characteristics of the samples recruited by studies?

RQ3) Did these scores change over twenty years? And because of the COVID-19 pandemic? Are these scores impacted by the methodological quality of the studies?

RQ4) What are the main results regarding the relationships between emotional-behavioural problems and other psychological outcomes in at-risk and clinical Italian adolescents?

2. Methods

2.1 Protocol registration

The study protocol was developed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021) and it has been pre-registered on PROSPERO (N. CRD42022299999). The first part of the study, regarding community samples, is fully illustrated in another manuscript (Pace et al., 2023).

2.2 Eligibility criteria

Inclusion and exclusion criteria were established coherently with the study's purpose.

Specifically, studies were included only when meeting the following inclusion criteria: (1) empirical study reporting quantitative and original data (excluding, *i.e.*, theoretical articles, commentaries, systematic reviews, same data from more studies, etc); (2) study conducted on a sample, or a subsample of adolescents aged 11-18 years living in Italy; (3) study including at least a clinical adolescent sample, *e.g.*, with a psychiatric diagnosis according to the DSM or the ICD manuals or referred for a psychopathological condition, and/or at-risk adolescent sample as defined in the introduction (*i.e.,* with socio-economic, medical, ACEs, environmental issues), except being at-risk of cognitive delay, given the low reliability of the ASEBA tools in this

population (Embregts et al., 2000); (4) study using the 2001 version of at least one ASEBA instrument (*i.e.*, CBCL 6-18, YSR 11-18, and TRF 6-18); (5) study documenting the raw mean obtained by the at-risk or clinical samples of Italian adolescents in at least one syndrome and/or broadband scale. Authors not providing this information in the available manuscript were temporally included and asked for the missing data. In case the authors did not provide the information, the contribution was then excluded; (6) the language of the studies had to be English or Italian.

2.3 Search strategy

2.3.1 Information sources

Systematic searches (from January 2001 to November 2021) were carried out on Scopus, EBSCO (PsycINFO, PsycArticles and Behavioural Science Collection), PubMed, Web of Sciences, and ProQuest databases. A search for grey literature (December 2021) was performed in several ways: screening the first 200 records on Google Scholar, asking for additional data from the authors contacted, and checking the reference lists of the included manuscripts for missing articles.

2.3.2 Search strategy

To ensure an exhaustive search, a list of keywords was developed and discussed by the research team. Specifically, two pools of keywords were created, corresponding to the "ASEBA" and the "Italian" constructs. Keywords related to the same construct were linked using the Boolean operator OR. Afterwards, the two pools of keywords were linked using the Boolean operator AND. The detailed syntax and its adaptations to the different databases' languages are displayed in Appendix A. Because of the limitations of the Google Scholar search tool, a reduced version of the syntax was used (see Appendix A).

2.3.3 Selection process

Following PRISMA indications (Page et al., 2021), records were managed in several steps. First, duplicates were removed using the tool of the Zotero software, reducing the original pool from 7103 to 6347. The remaining records were independently screened by the third and fourth authors, including, and excluding single records throughout the evaluation of their titles and abstracts. At the end of this operation, 555 records were classified as potentially eligible. Therefore, the corresponding full texts were downloaded and screened leading to the inclusion of 40 final studies. In case of disagreements, the decision was made through discussion (inter-rater agreement rate = 92.73%). The reader can find the graphic illustration of this selection process as well as details regarding the reasons for exclusion in **Figure 1.**

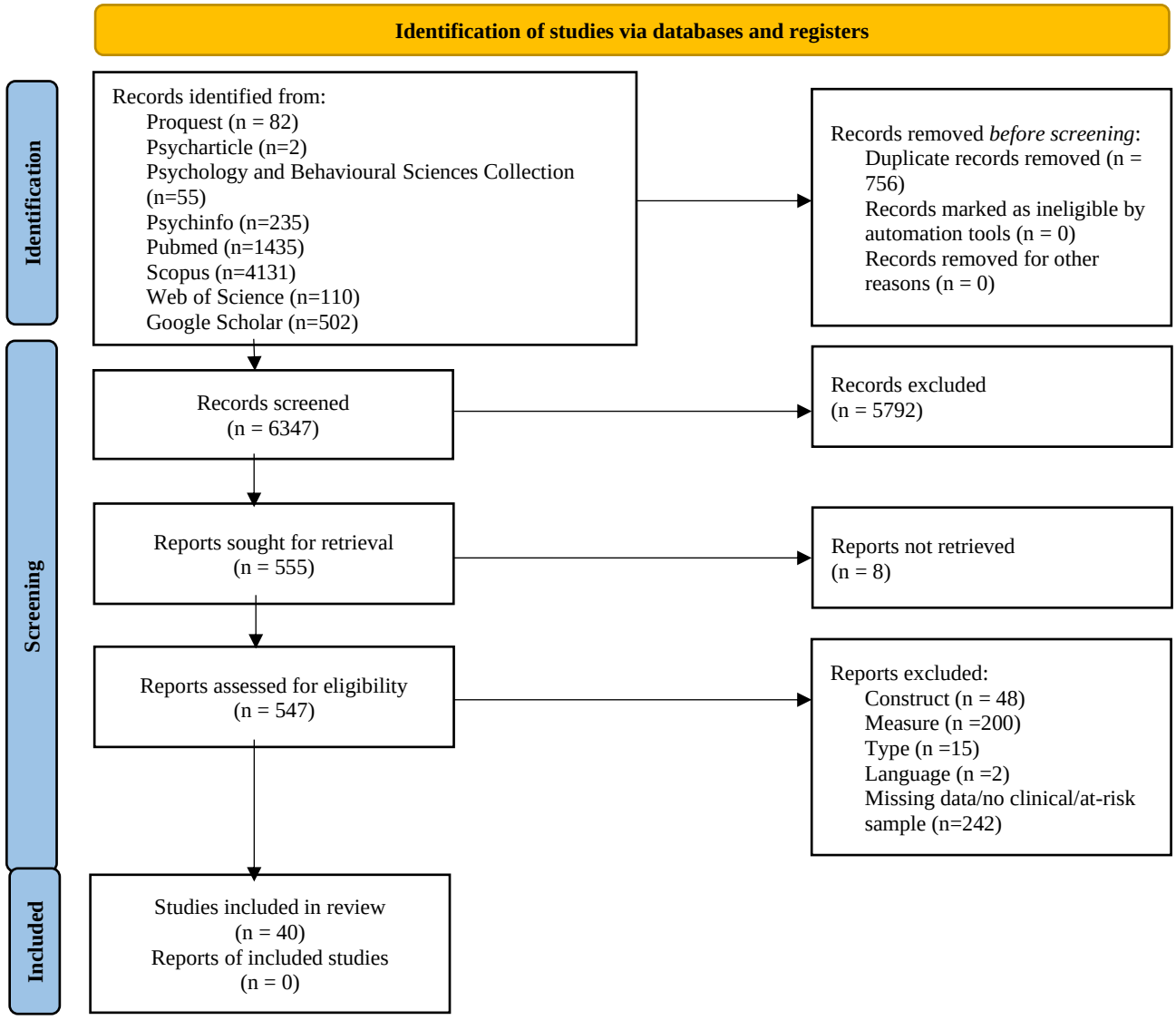


Figure 1. Flow diagram of the selection process

2.4 Data extraction

A protocol for data extraction and coding was co-developed by the research team according to the aims. Information was independently extracted by two researchers (W.M. and V.B.). When doubts or disagreements emerged, these were resolved through discussion including another researcher (S.M.). The protocol provided indications for the extraction of data on the following areas: i) *studies' characteristics*: Authors, Publication year (coded as 2022 – publication year), publication status (published *versus* unpublished), diffusion (published in an international *versus* Italian journal); ii) *characteristics of participants*: sample size, gender composition (reported as the percentage of males), mean age (in years), age range (in years), status (clinical *vs.* at-risk); features (a brief narrative description); iii) *methods' characteristics*: ASEBA instrument used (CBCL, YSR, or TRF), period of data collection with regards to the COVID-19 outbreak (pre or post-pandemic), quality evaluation (a detailed explanation is available in the paragraph below); iv) *outcomes*: raw mean scores and standard deviations obtained on the ASEBA scales. In case the

data provided in the original manuscript did not explicitly refer to the raw scores, the corresponding author was emailed asking for this information. No responses led to the exclusion of the contribution. Globally 112 authors were contacted with 17.86% of them providing the requested information.

2.5 Study risk of bias assessment

The evaluation of the methodological quality of the studies was carried out using a version of the checklist Newcastle-Ottawa Scale (NOS; Wells et al., 2011 O' Driscolland et al., 2014; Modesti et al., 2016) tailored to the specificities of epidemiological studies. Two researchers (W.M. and V.B.) independently evaluated the included studies. In case of discrepancies, a third author (S.M.) was asked to solve the disagreement. The tool assesses features related to the domains of selection (e.g., definition and representativeness of the cases), comparability (i.e., the inclusion of control variables), and outcome (e.g., the reliability of measurement, and the documentation of response rates). This allowed the assignment of a global score of quality to each contribution.

2.6 Statistical analyses

The computation of pooled means was carried out using the *meta* and the *metafor* packages of the R software for Mac. Because of the nature of the data, the random effect model was selected. Indeed, the possibility that each study had an independent effect related to its sample and that observations were significantly heterogeneous was judged to be high (Rosenthal, 1995). This conservative approach was more appropriate as it allows inferential conclusions concerning the general population (Cooper and Hedges, 1994).

After the computation of pooled means, standard errors, and confidence interval (95%), the Q statistic was computed to estimate the heterogeneity. In case the latter resulted in statistically significant, the last step of the statistical analysis estimated the direction and the statistical significance of several moderation effects. Specifically, the effects of moderators were tested through meta-regressions (Borenstein et al., 2009; Rosenthal, 1995). Regarding categorical moderators (pre/post-pandemic period of data collection), the analysis was performed only in case of sufficient heterogeneity (*i.e.,* at least four contributions for each value of the categorical moderator). Because we collected very few observations among at-risk samples assessed with YSR, no moderation analyses were carried out on this sub-pool of studies.

3. Results

3.1 Main characteristics of the included studies

The 40 included studies (all were published between 2008 and 2021) contained 49 independent observations (N=3074) as some studies provided data regarding independent samples. Most of

them were published in international scientific journals (n=31), with the others being printed in Italian journals. Noteworthy, 27 included observations employed the CBCL and 21 the YSR, while none provided data collected through the TRF.

Clinical Samples. A significantly large pool of observations (N=33) reported data related to *clinical* samples (see **Table 1**; n=2206; n_{range}=1-222), with 36.36% of them (n=12) conducted on adolescents suffering from eating disorders (N=1183; 53.63% of the participants). The second largest category (n=10) consisted of studies on participants suffering from a psychiatric disorder related to the externalizing domain (*e.g.,* antisocial or conduct disorders), for a total of 342 participants (15.50% of the participants). Some studies (n=4) were conducted on a sample which received miscellaneous or poorly specified types of diagnoses, such as "relational or affective disorders" or "acute mental disorders". This category counts 183 participants, accounting for 8.30% of the whole population. Also, three studies considered individuals suffering from self-harm or suicidality (n=346) accounting for 15.68% of the total number of participants. A single study provided observations (n=65) conducted on two independent samples of individuals with specific learning disabilities. Lastly, two single studies were conducted on participants with gender dysphoria (n=46) and those suffering from psychosomatic disorders (n=31).

Eighteen observations were obtained using the CBCL with the remaining using the YSR (n=15). Among the studies, 25 provided information regarding gender composition with the average percentage of males being 44.84, and 25 observations indicated the mean age of their samples with the average value being 14.92 years. Lastly, five studies were conducted after the COVID-19 pandemic and most (n=25) were published in international journals. Boxplots displaying measures of locations are available in Figure 2.

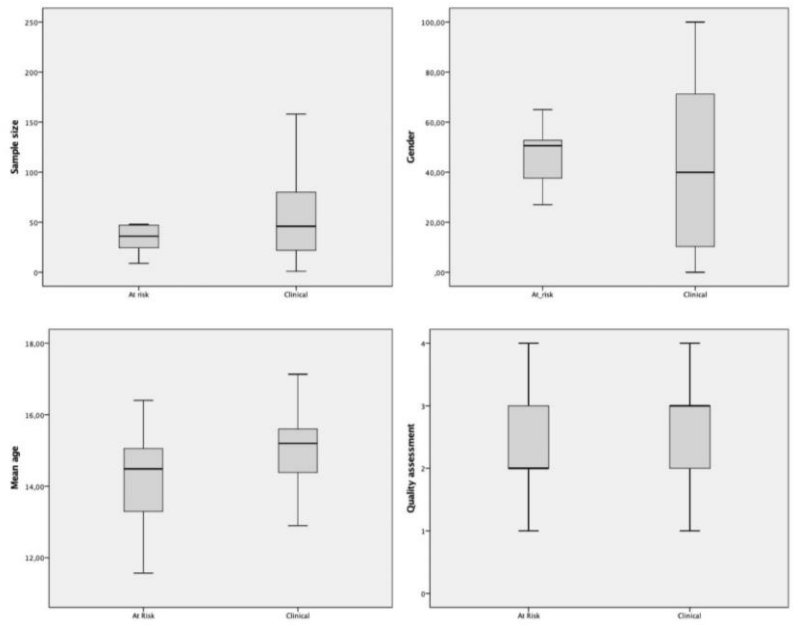


Figure 2. Boxplots of measures of location of studies with at-risk and clinical samples.

Table 1. Main characteristics of the included studies conducted on clinical samples (N=33)

Study	Dissemination	Design	Geographic area	Tool	N	Sample features	% males	Age		Pre/post pandemic	Quality
								range	Mean (SD)		
Ballarotto et al., 2017	I	cross-sectional	center	YSR	78	Binge Eating Disorder	51.28	14-17	-	Pre	3
Bizzi, 2019	N	cross-sectional	north	CBCL	31	Psychosomatic disorders	51.35	11-15	12.9 (1.39)	Pre	2
Bizzi and Pace, 2019	I	cross-sectional	north	CBCL	7	Disruptive behaviour disorder	85.71	11-12	12 (1.39)	Pre	2
Caprara et al., 2017	N	cross-sectional	north	CBCL	109	Conduct disorder, oppositional defiant disorder or attention deficit and hyperactivity disorder, also associated with mood disorders	74.3	11-18	13.83 (1.7)	Pre	2
Castaldo et al., 2020	N	cross-sectional	center	CBCL	171	Suicidality	33.9	11-17	15.6 (1.6)	Pre	3
Castelnovo et al., 2021	I	cross-sectional	north	CBCL	46	Disorders of arousal	26.1	11-17	13.83 (2.28)	Pre	2
Cimino et al., 2018	I	cross-sectional	center	YSR	78	Binge Eating Disorder	51.3	14-17	15.5 (0.91)	Pre	2
Cinelli et al., 2020	I	cross-sectional	center	YSR	87	Eating disorder	9.2	12-18	15.6 (2.8)	Pre	4
D'amico and Guastaffero, 2017 (sample 1)	I	cross-sectional	-	YSR	34	Specific learning disorder	79.4	14-19	16 (-)	Pre	1
D'amico and Guastaffero, 2017 (sample 2)	I	cross-sectional	-	CBCL	31	Specific learning disorder	-	14-19	-	Pre	1
Fisher et al., 2017	N	cross-sectional	-	YSR	46	Gender dysphoria	-	14-18	16 (1.49)	Pre	1
Gatta et al., 2019 (sample 1)	N	cross-sectional	north	CBCL	35	Relational or affective disorders	11.4	12-17	-	Pre	4
Gatta et al., 2019 (sample 2)	N	cross-sectional	north	CBCL	19	Behavioural and/or personality disorder	11.4	12-17	-	Pre	4
Gatta et al., 2019 (sample 3)	N	cross-sectional	north	CBCL	1	Behavioural and emotional disorders	11.4	12-17	-	Pre	4

Guarino and Vismara, 2012	N	cross-sectional	south	YSR	15	Antisocial conducts	100	14-19	17.13 (1.58)	Pre	0
Iannattone et al., 2021	I	cross-sectional	north	YSR	80	Miscellanous psychiatric disorders with and without withdrawal	48.8	12-17	15.2 (1.49)	Pre	2
Malagoli et al., 2021	N	cross-sectional	north	YSR	11	Eating disorder	0	15-19	17.08 (144)	Pre	1
Mandarelli et al., 2017	I	cross-sectional	center	YSR	22	Acute mental disorders	68.2	11.4-18	15.8 (1.6)	Pre	1
Masi et al., 2020	I	cross-sectional	north	CBCL	41	High functioning autism spectrum disorder and bipolar disorder, suicidality	46	11-18	15.15 (1.99)	Pre	2
Mauri et al., 2020	I	cross-sectional	-	CBCL	9	ADHD	0	11-17	13.7 (2.03)	Pre	1
Monteleone et al., 2021 (sample 1)	I	cross-sectional	center	YSR	158	Anorexia nervosa; below the 5th percentile	-	-	15.34 (1.69)	Post	3
Monteleone et al., 2021 (sample 2)	I	cross-sectional	center	YSR	222	Anorexia nervosa; above the 5th percentile	-	-	14.56 (1.73)	Post	3
Monteleone et al., 2021 (sample 3)	I	cross-sectional	center	YSR	204	Anorexia nervosa; below the 10th percentile	-	-	15.3 (1.68)	Post	3
Monteleone et al., 2021 (sample 4)	I	cross-sectional	center	YSR	176	Anorexia nervosa; above the 10th percentile	-	-	14.41 (1.72)	Post	3
Muratori et al., 2008	N	cross-sectional	north	CBCL	21	Anorexia nervosa	0	13-17	16.6 (1.07)	Pre	3
Muratori et al., 2017a (sample 1)	N	longitudinal	north	CBCL	28	Conduct and oppositional defiant disorders	-	13-15	13.95 (1.6)	Pre	4
Muratori et al., 2017a (sample 2)	N	longitudinal	north	CBCL	27	Conduct and oppositional defiant disorders	-	13-15	14.55 (1.6)	Pre	4
Muratori et al., 2017b	I	cross-sectional	north	CBCL	72	Oppositional defiant disorder	90.28	12-14	-	Pre	3
Muratori et al., 2016	I	longitudinal	north	CBCL	55	Disruptive behaviour disorder	90.9	13-16	14.36 (1.31)	Pre	3
Raffagnato et al., 2020	N	cross-sectional	north	YSR	134	Self-harm	14.28	11-18	15.2 (1.33)	Pre	3
Troncone et al., 2020 (clinical sample)	I	cross-sectional	south	CBCL	73	Eating disorders	-	13-18	15.42 (1.49)	Pre	4
Urgesi et al., 2012	I	cross-sectional	north	CBCL	15	Anorexia nervosa	0	13-17	15.5 (1.2)	Pre	2
Zanna et al., 2017	I	longitudinal	-	YSR	60	Anorexia nervosa	6.7	11-17.7	14.8 (1.8)	Pre	2

Note: - = information not retrieved; N = National; I = International

At-Risk Samples. A lower number of observations (N=16; see **Table 2**) including 868 participants (n_{range}= 9-200) reported data related to at-risk samples. The highest number of participants (n=660) was found among the nine studies which recruited adolescents with a medical illness *(i.e.*, diabetes, epilepsy, headache, consequences of motor vehicle collision). This together provides 76.03% of the population. Another category counting some observations (n=5) included studies on 177 adopted adolescents, representing 20.39% of the at-risk population. Two other studies recruited adolescents exposed to risks related to their relationships with caregivers including individuals in residential care (n=20) and with mothers on dialysis or microphthalmia (n=11).

Eleven observations consisted in data collected with the CBCL, with the remaining (n=5) employing the YSR. The average percentage of males included across the sample was 45.93% (one paper did not provide this information) and the pondered mean age was 14.72 years. Most studies (n=12) were published in international journals and only one was conducted after the COVID-19 pandemic. Boxplots displaying measures of locations are available in Figure 2.

Table 2. Main characteristics of the included studies conducted on at-risk samples

Study	Dissemination	Design	Geographic area	Tool	N	Sample features	% males	Age		Pre/post pandemic	Quality
								range	Mean (SD)		
Balenzano et al., 2013	N	cross-sectional	South	CBCL	37	Adopted	51	11.0 - 18.0	14.98 (1.93)	Pre	2
Balenzano et al., 2018	I	cross-sectional	South	YSR	37	Adopted	51	11.0 - 18.0	14.98 (1.93)	Pre	2
Barone et al., 2016	I	cross-sectional	-	CBCL	9	Headache	55.6	11-12	11.57 (0.24)	Pre	4
Battistutta et al., 2009	I	cross-sectional	-	YSR	48	Headache	33.3	11-18	13.4 (1.8)	Pre	2
Bizzi et al., 2021	N	cross-sectional	North	CBCL	31	Diabete	29	11-13	12.2 (0.94)	Pre	2
Cerniglia et al., 2015	N	cross-sectional	-	YSR	150	With consequences of vehicle collisions	50.6	14-17	15.57 (0.7)	Pre	4
Molina et al., 2014	N	cross-sectional	North	CBCL	26	Adopted	50	11-18	13.19 (1.74)	Pre	1
Muzi and Pace, 2020a	I	cross-sectional	North	YSR	20	Residential care	65	13-18	16.4 (1.4)	Pre	1
Muzi and Pace, 2020b	I	cross-sectional	North	YSR	31	Adopted	54.5	11-18	14.77 (2.08)	Pre	2
Operto et al., 2018	I	cross-sectional	South	CBCL	35	Headache	42	11-18	14.89 (3.2)	Pre	2
Operto et al., 2020	I	longitudinal	South	CBCL	37	Epilepsy	59	12-18	13.78 (1.6)	Pre	2
Pace and Muzi, 2017	N	cross-sectional	North, center	CBCL	46	Adopted	50	11-17	13.5 (1.59)	Pre	2
Pasca et al., 2021	I	cross-sectional	North	CBCL	23	Epilepsy	27	11-18	14.2 (2.5)	Post	2

Piccoli et al., 2015	I	cross-sectional	north, center, south	CBCL	11	With mothers on dialysis or microcythaemia	27.3	11-13	12 (0.89)	Pre	1
Troncone et al., 2020 (sample 1)	I	cross-sectional	South	CBCL	200	Diabete	51	13-18	15.24 (1.45)	Pre	4
Troncone et al., 2020 (sample 2)	I	cross-sectional	South	CBCL	127	Diabete	-	13-18	15.13 (1.43)	Pre	4

Note: - = information not retrieved; N = National; I = International.

Response to RQ1: What are the pooled mean scores of at-risk and clinical Italian adolescents' emotional-behavioural problems -in terms of total, externalizing, internalizing problems, and specific scales- assessed through ASEBA?

Data regarding the number of independent observations, the number of adolescents, and the pooled means are provided in **Table 3**. Results are displayed for the CBCL and YSR and the clinical and at-risk samples separately.

Table 3. Pooled means of emotional-behavioural problems in the CBCL and YSR among clinical and at-risk samples

Dimension	Clinical samples				At-risk samples			
CBCL	*k*	*N*	*Mean*	*95% CI*	*k*	*N*	*Mean*	*95% CI*
Total problems	10	539	57.55	(52.20; 62.90)	8	340	43.39	(32.01; 54.76)
Internalizing problems	9	433	52.45	(32.40; 72.49)	8	343	22.72	(7.69; 37.74)
Anxious/depressed	8	231	49.46	(30.77; 68.16)	7	310	28.38	(16.59; 40.17)
Withdrawn/depressed	8	231	47.88	(34.84; 60.92)	6	273	21.89	(9.29; 34.50)
Somatic complaints	8	286	46.38	(29.53; 63.23)	7	309	26.77	(17.04; 36.50)
Externalizing problems	13	645	44.66	(26.06; 63.30)	8	344	19.19	(7.13; 31.26)
Aggressive behaviours	10	341	52.20	(32.75; 71.65)	6	280	21.95	(11.36; 32.54)
Rule-oppositional behaviours	10	341	49.05	(28.60; 69.52)	6	279	19.76	(9.52; 30.00)
Thought problems	8	231	46.19	(28.86; 63.53)	6	277	19.05	(11.26; 26.84)
Attention problems	8	231	47.06	(26.71; 67.42)	6	278	22.41	(13.17; 31.65)
Social problems	9	269	47.48	(29.78; 65.19)	6	276	21.64	(10.15; 33.14)
YSR								
Total problems	11	681	62.24	(58.21; 66.27)	4	142	53.42	(45.76; 61.07)
Internalizing problems	11	651	56.65	(46.15; 67.15)	4	125	16.88	(14.15; 19.60)
Anxious/depressed	10	1121	58.24	(51.90; 64.57)				
Withdrawn/depressed	6	361	55.14	(28.43; 81.85)				
Somatic complaints	10	1121	54.19	(48.21; 60.17)				

Externalizing problems	11	651	45.74	(36.23; 55.25)	4	125	14.38	(9.89; 18.86)
Aggressive behaviours	10	1121	52.18	(47.45; 56.91)				
Delinquent behaviours	6	361	47.74	(35.21; 60.27)				
Thought problems	6	361	51.40	(40.69; 62.11)				
Attention problems	6	361	50.84	(35.70; 65.99)				
Social problems	7	399	53.24	(31.73; 74.74)				

k = number of samples, *N* = sample size, *CI* = Confidence Intervals.

For the CBCL's data on clinical samples, forest plots are provided for the Total (**Figure 3**), Internalizing (**Figure 4**), and Externalizing (**Figure 5**) problems. Two studies, conducted on adolescents with an arousal disorder (Castelnovo et al., 2021) and with an eating disorder (Troncone et al., 2020) always resulted on the extreme left of the Forest plot corresponding to very low ASEBA scores.

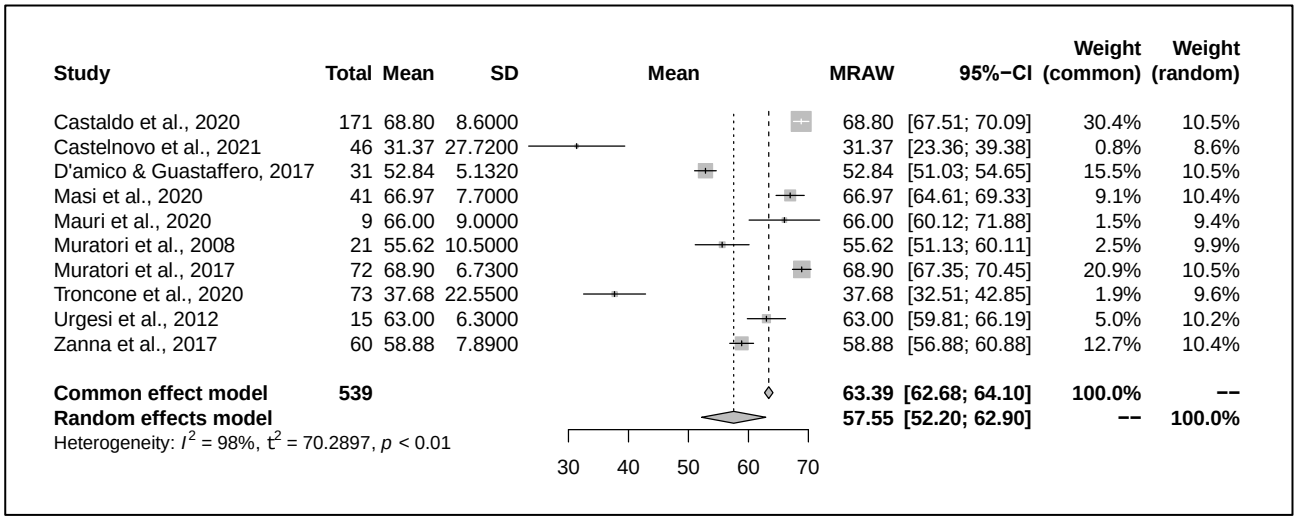
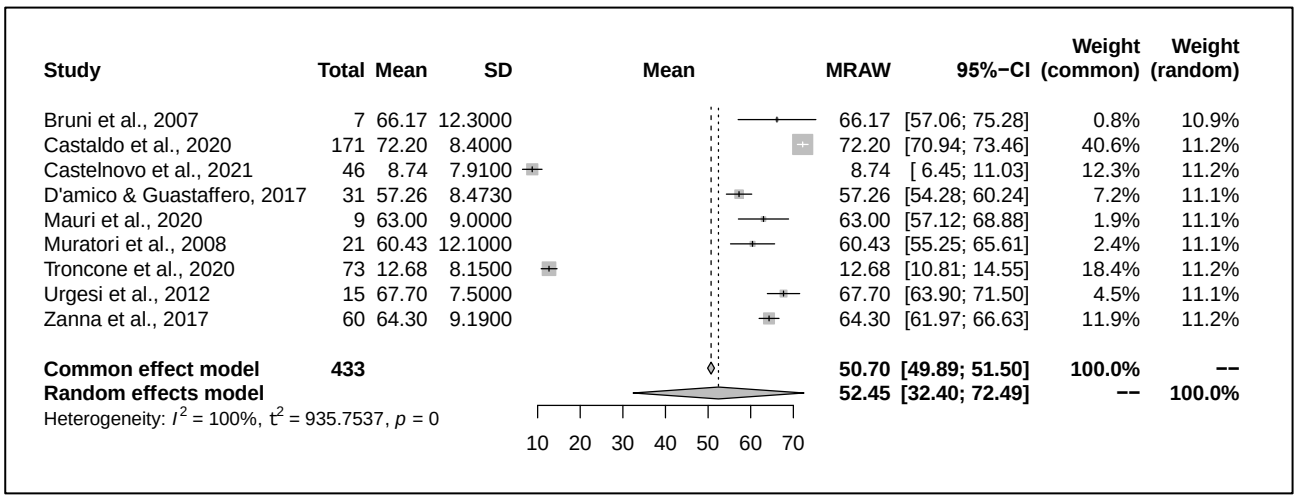
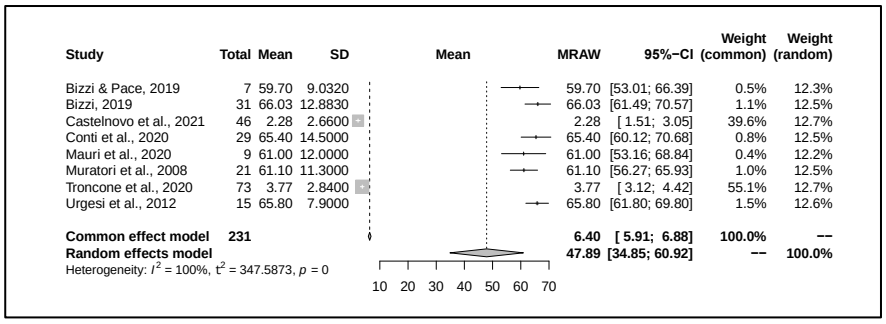


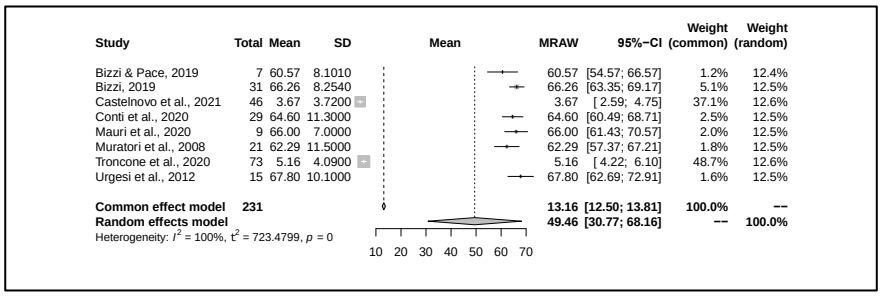
Figure 3. Forest plot for CBCL Total scores among clinical samples



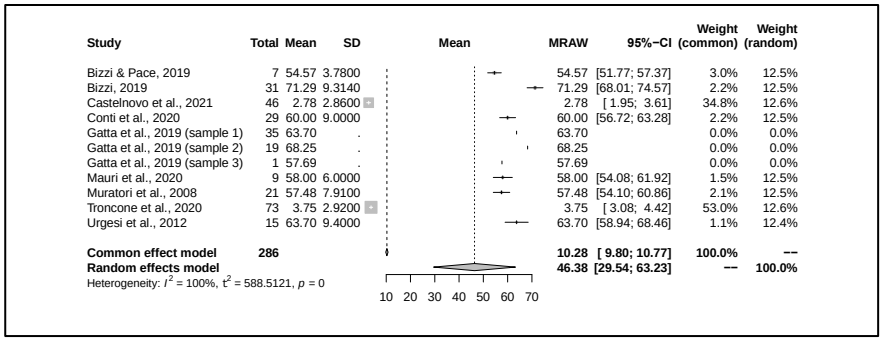
4a. CBCL Internalizing



4b. CBCL Withdraw

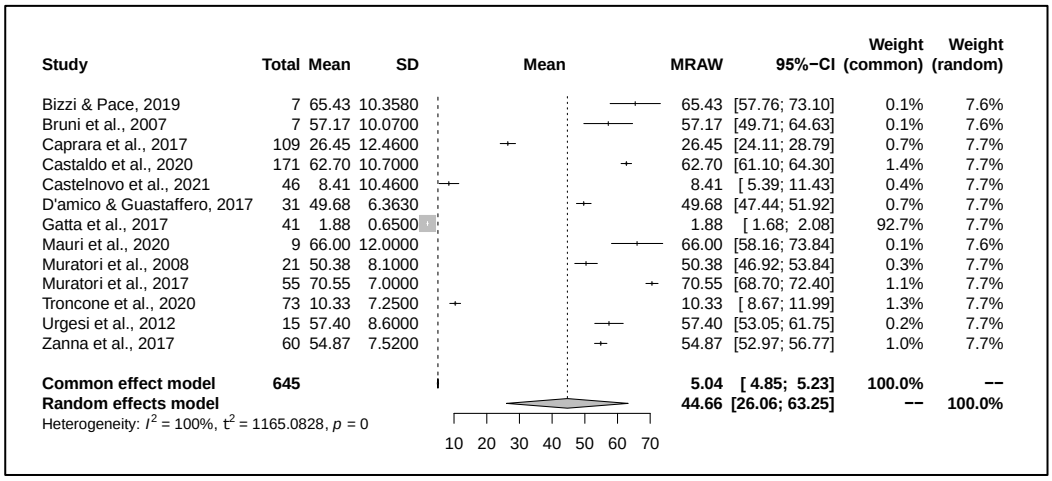


4c. Anxiety

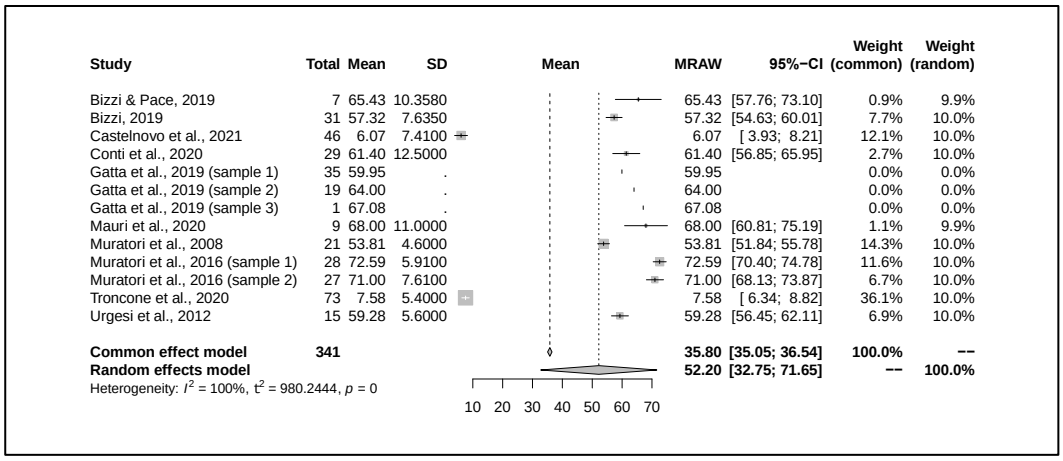


4d. CBCL Somatic

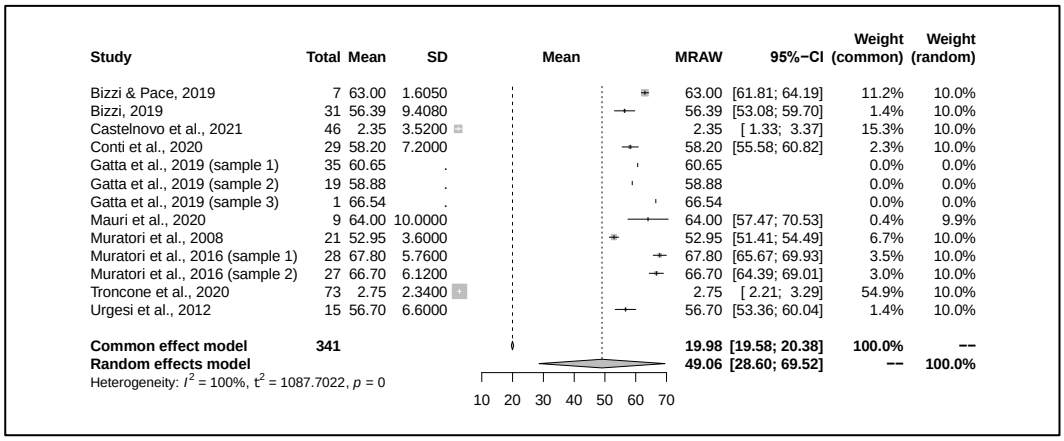
Figure 4. Forest plots for the internalizing CBCL scores among clinical samples



5a. CBCL Externalizing



5b. CBCL Aggression



5c. CBCL Rule breaking

Figure 5. Forest plots for the externalizing CBCL scores among clinical samples.

Concerning the CBCL's data on at-risk samples, forest plots are provided for the Total (**Figure 6**), Internalizing (**Figure 7**), and Externalizing **(Figure 8**) problems. Regarding the Total scores, studies appeared to be quite homogeneous. In contrast, for both the Internalizing and Externalizing dimensions and sub-dimensions, two studies appear to be systematically collocated on the extreme right of the Forest plots, suggesting that their participants obtained very high scores. Of note, both were conducted on adolescents suffering from epilepsy (Operto et al., 2020; Pasca et al., 2020).

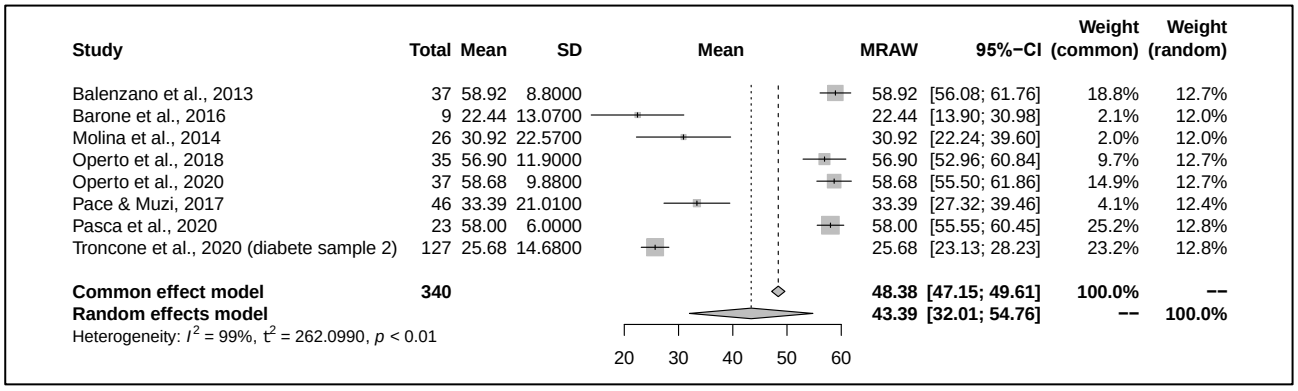
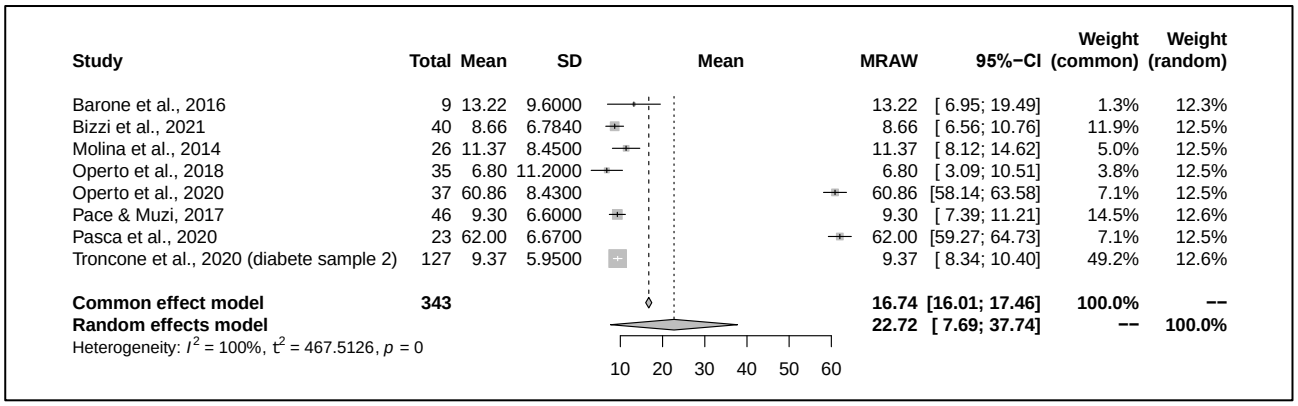
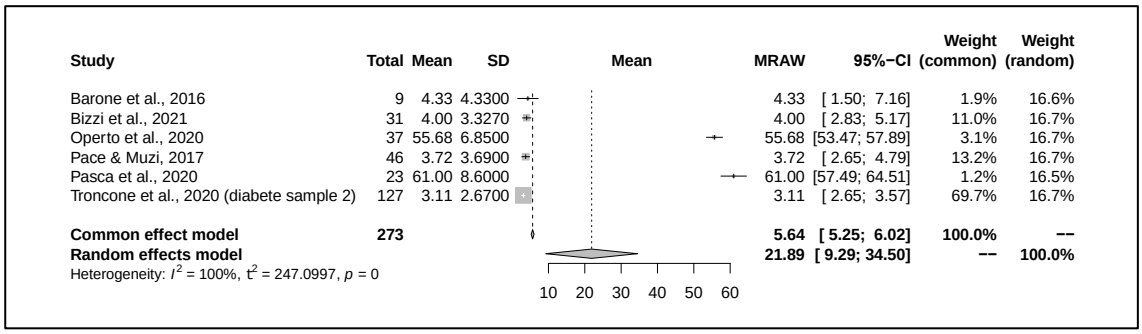


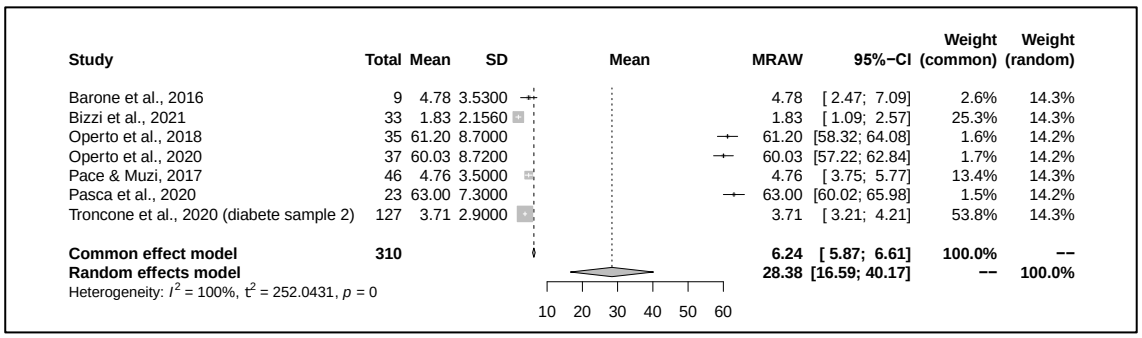
Figure 6. Forest plot for CBCL Total scores among at-risk samples.



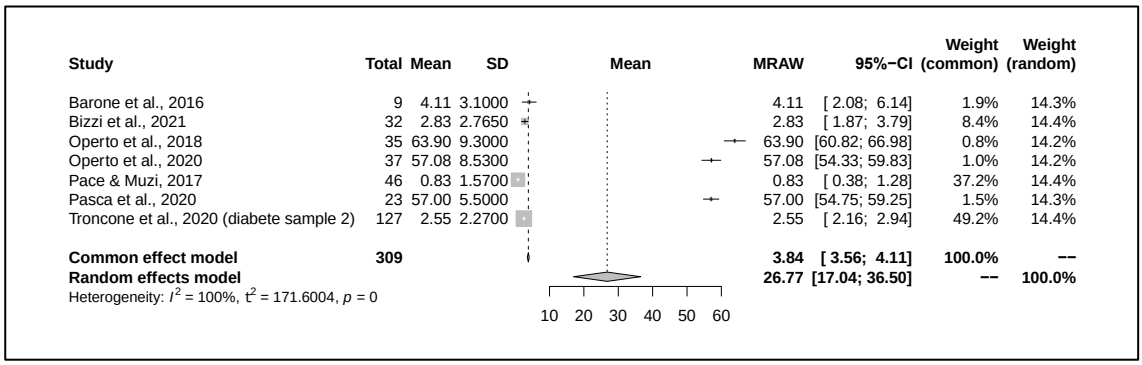
7a. CBCL Internalizing



7b. CBCL Withdraw

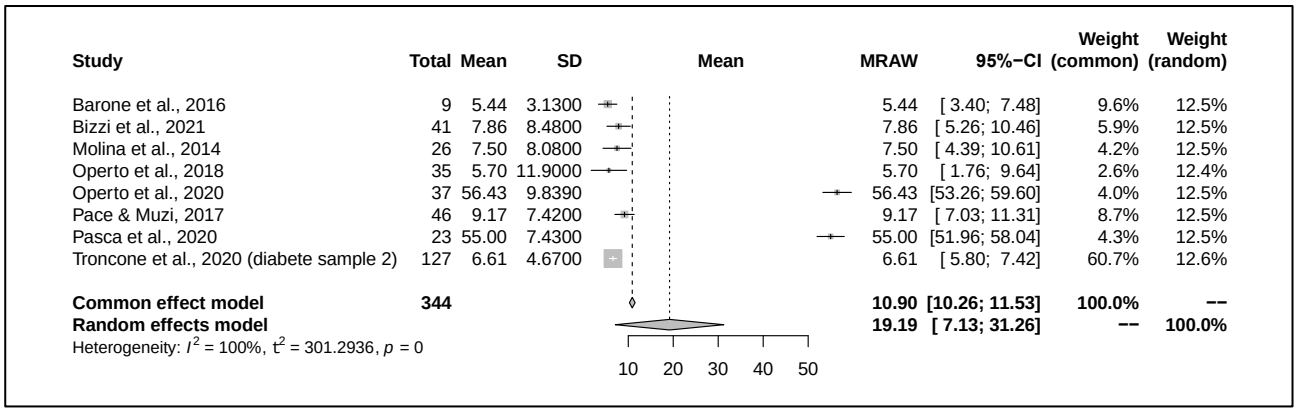


7c. CBCL Anxiety

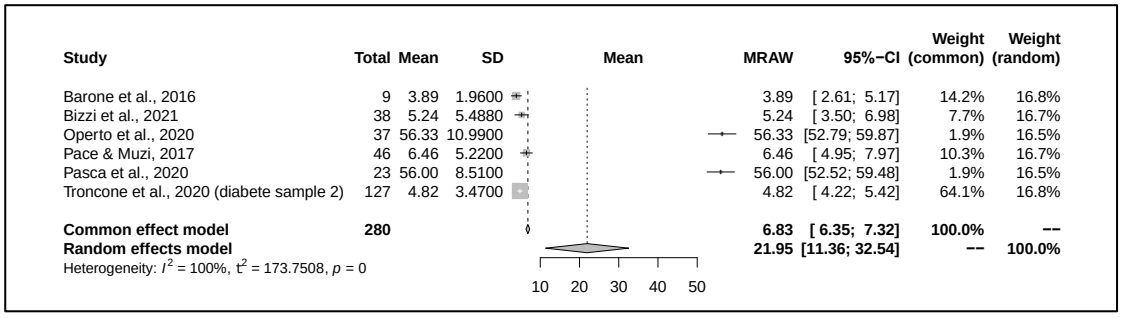


7d. CBCL Somatic

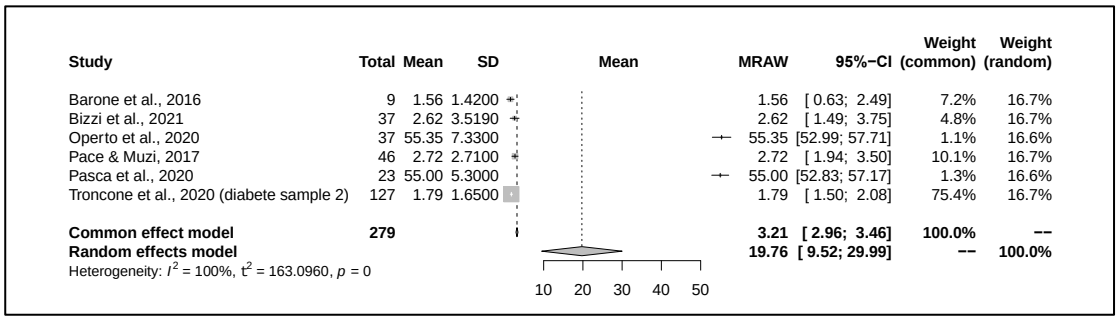
Figure 7. Forest plots for the internalizing CBCL scores among at-risk samples.



8a. CBCL Externalizing



8b. CBCL Aggression



8c. CBCL Rule breaking

Figure 8. Forest plots for the externalizing CBCL scores among at-risk samples.

Regarding the YSR data of observations obtained on clinical samples, forest plots about Total, Internalizing, and Externalizing with related subscales are displayed in **Figures 9**, **10**, and **11** respectively. Concerning Total scores, studies were quite homogeneously distributed, except for the one conducted on adolescents suffering from binge eating disorder (Cimino et al., 2018), who obtained very high scores. Concerning Internalizing and Externalizing sub-dimensions, studies were well distributed except for Malagoli et al. (2021), who documented very low scores among adolescents with eating disorders.

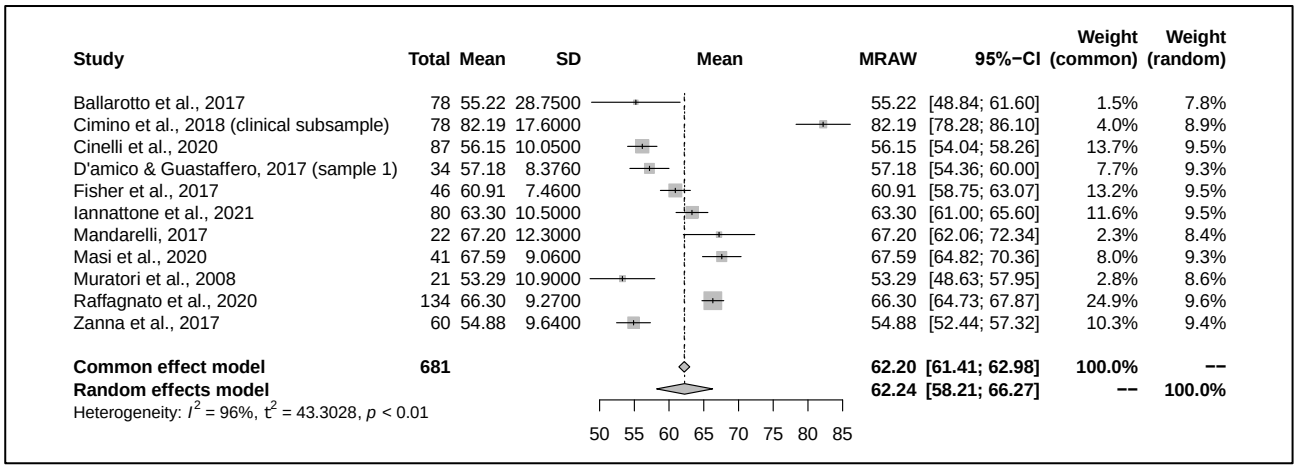
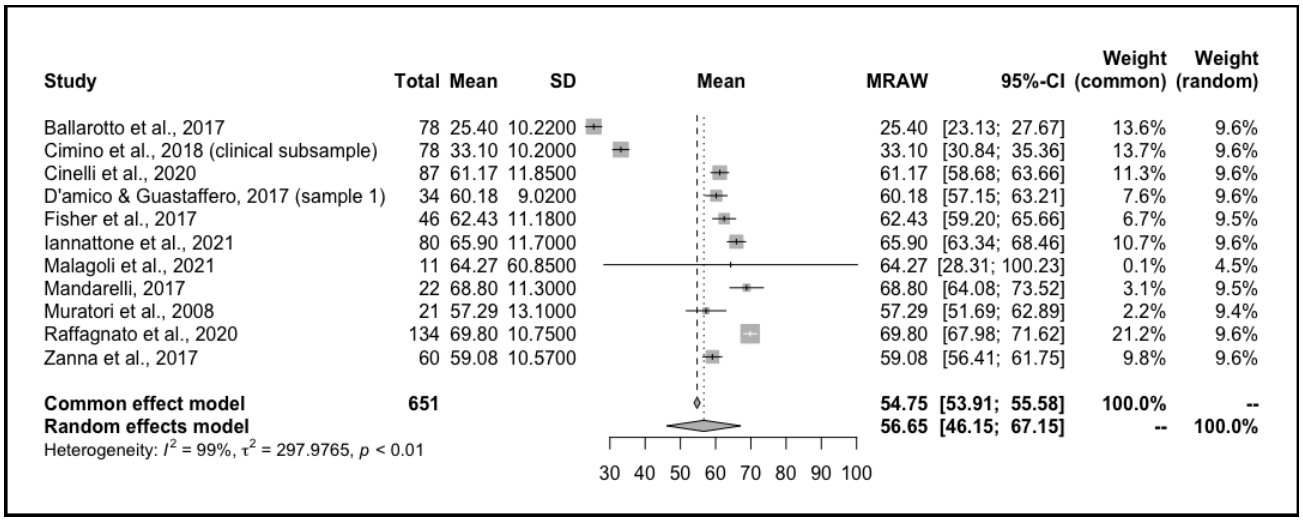
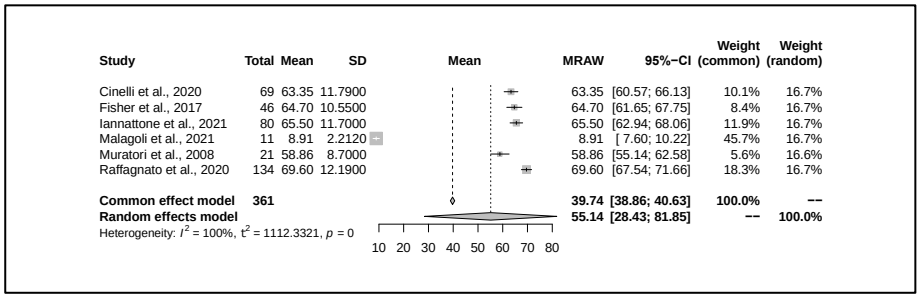


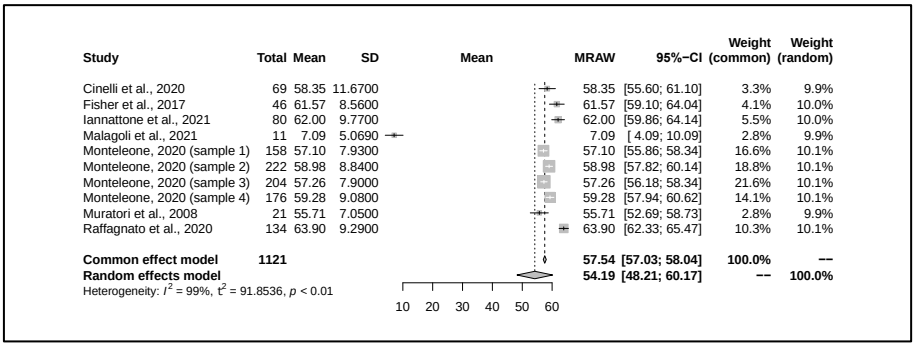
Figure 9. Forest plot for the Total YSR scores among clinical samples.



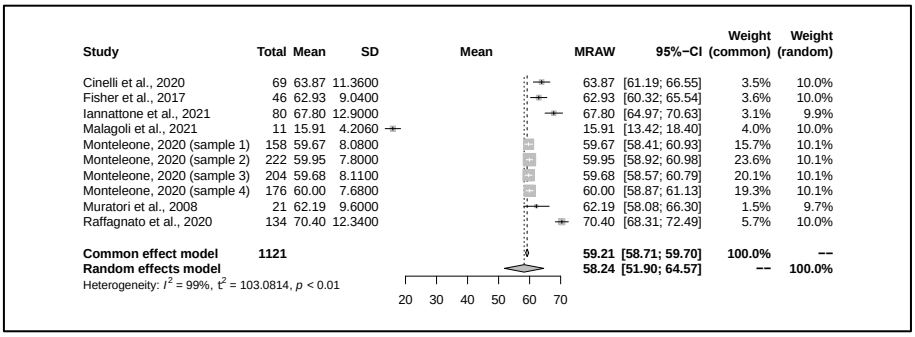
10a. YSR Internalizing



10b. YSR Withdraw

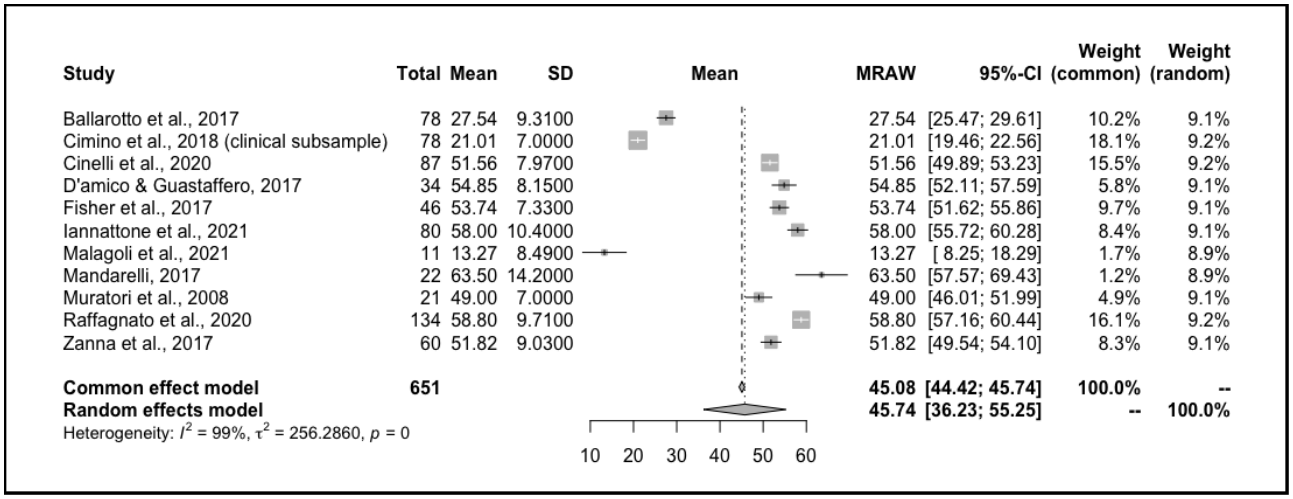


10c. YSR Anxiety

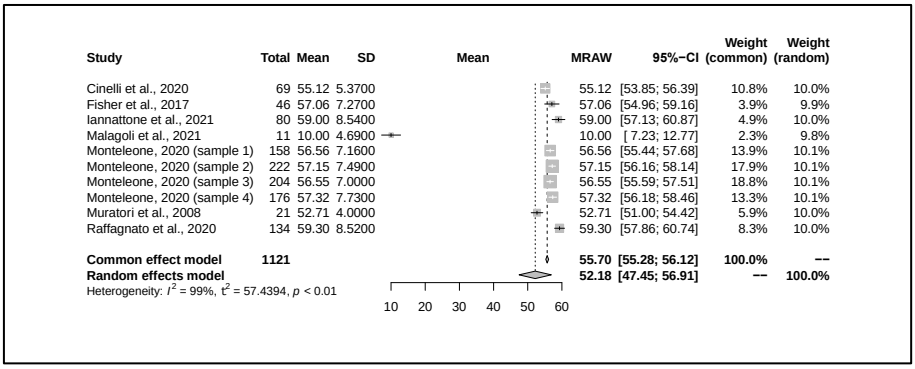


10d.YSR Somatic

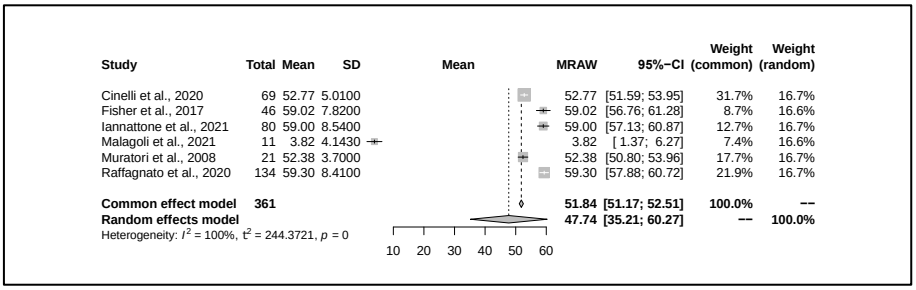
Figure 10. Forest plots for the internalizing YSR scores.



11a. YSR Externalizing

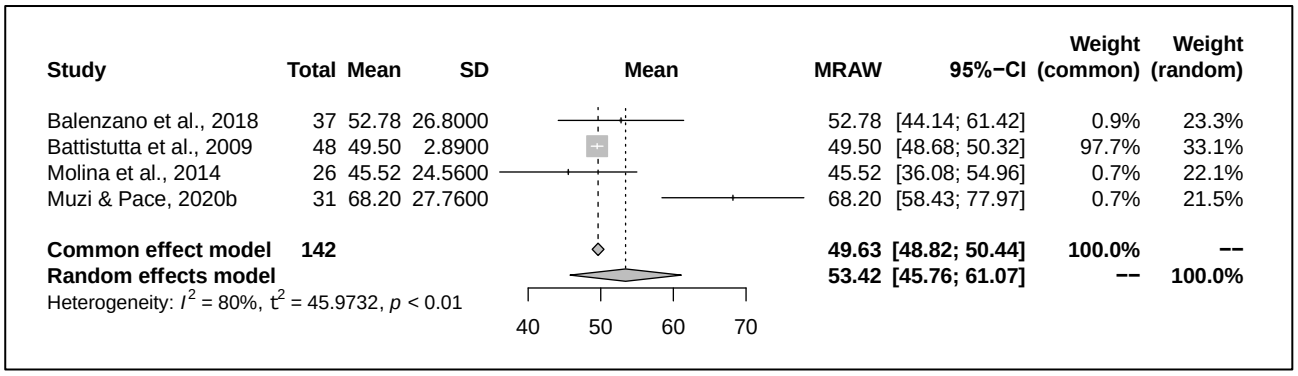


11b. YSR Aggression

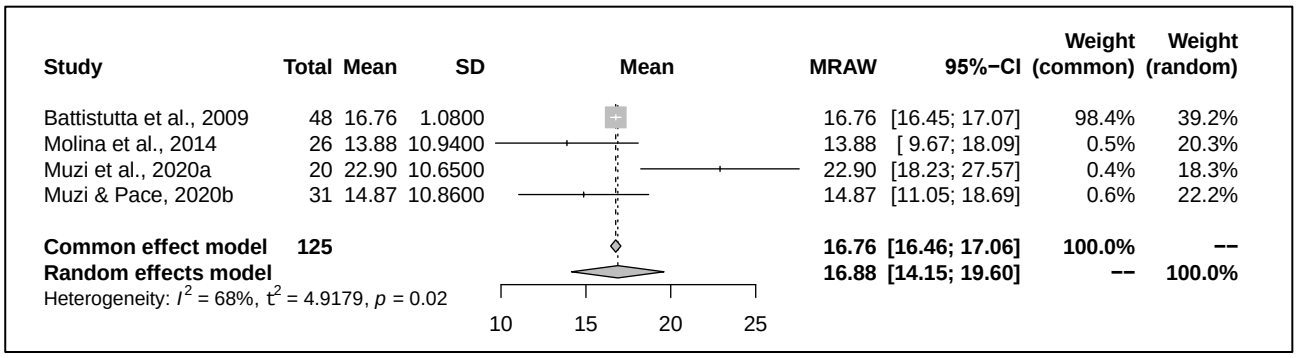


11c. YSR Delinquent

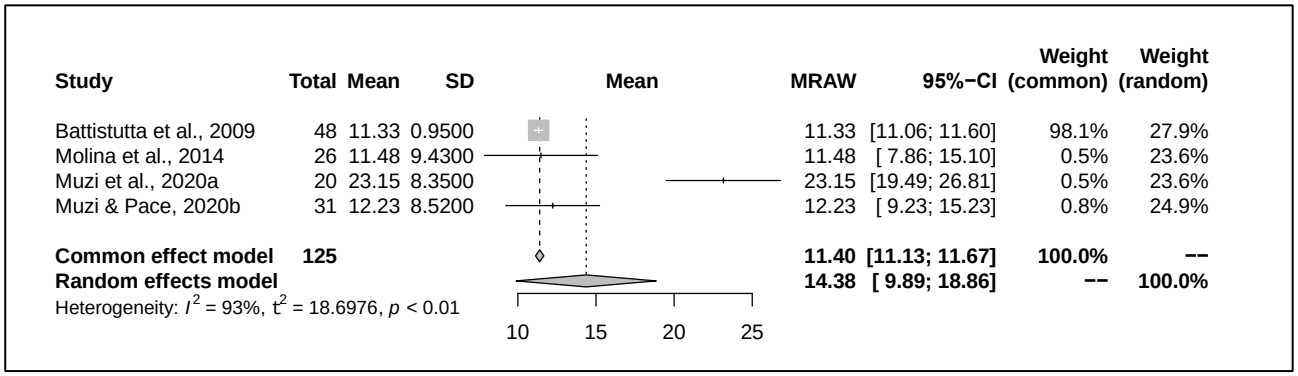
Figure 11. Forest plots for the externalizing YSR scores.



12a. YSR Total



12b. YSR Internalizing



12c. YSR Externalizing

Figure 12. Forest plots for the externalizing YSR scores among at-risk samples.

Appendixes displayed funnel plots regarding pooled means in the CBCL (**Appendix B** and **C** for clinical and at-risk samples respectively) and the YSR (**Appendix D** and **C** for clinical and at-risk samples respectively).

3.2 Comparison between at-risk and clinical samples

To explore differences between at-risk and clinical samples on ASEBA means, moderation analyses were carried out, using the sample status as a moderator. Details of all results are available in **Appendix F**. Regarding the studies employing the CBCL, the analyses showed that clinical samples obtained significantly higher means than at-risk samples on all the scales scores except for the Anxious/Depressed and Somatic Complaints. The same analyses performed on the data provided by studies using the YSR

revealed that higher scores were obtained by the clinical samples, compared to the at-risk samples on the Total (Q =4.88, p<.05), Internalizing (Q =5.41, p<.05) and Externalizing (Q = 5.07, p<.05) scales.

Response to RQ2: Do these scores vary according to socio-demographic (*i.e.*, gender and age) characteristics of the samples recruited by studies?

Gender composition was never revealed as a significant moderator neither in clinical or at-risk samples nor using the CBCL or the YSR. Non-significant results are all displayed in Appendix F.

A significant moderation effect of age was found regarding several YSR scales measured among clinical samples. Specifically, results showed that the higher the mean age, the lower the scores on most of the ASEBA scales, namely the Externalizing problems (Q = 13.16, p<.05, β= -17.14, se=4.73), Aggression (Q = 8.00, p<.05, β=-12.70, se=4.49), Delinquency (Q = 6.08, p<.05, β= -22.06, se=8.95), Thought problems (Q =7.75, p<.05, β=-21.67, se=7.78), Withdraw/Depressed (Q =7.38, p<.05, β=-24.26, se=8.93), Anxiety/Depression (Q =4.80, p<.05, β=-11.33, se=5.17), Attention problems (Q =6.98, p<.05, β=-21.96, se=8.31), Social problems (Q =9.31, p<.05, β=-21.45, se=7.03), and Somatic problems (Q =6.78, p<.05, β=-13.66, se=5.25).

Noteworthy, because of the insufficient number of studies, the moderating role of age among the observations using the YSR with at-risk samples was not tested.

Response to RQ3: Did these scores change over twenty years? And as a consequence of the COVID-19 pandemic? Are these scores impacted by the methodological quality of the studies?

The test of the categorical moderator related to the period of data collection (pre- vs post-pandemic) was possible only with regards to the YSR values obtained in the Aggression, Anxiety/Depression, and Somatic Problems documents among clinical samples. However, none of these analyses led to statistically significant results.

Moreover, the publication year and the score at the quality assessment did not result in significant moderators.

The reader can find the details regarding the remaining non-significant results in Appendix F.

Response to RQ4: What are the main results regarding the relationships between emotional-behavioural problems and other psychological outcomes in at-risk and clinical Italian adolescents?

In the pool of selected studies, ASEBA tools were used in several types of empirical investigation.

Among *clinical* samples, a minor but promising line of research includes studies using ASEBA to assess changes in mental health in response to the COVID-19 pandemic (Pasca et al., 2020) or therapeutic interventions (Operto et al., 2020; Muratori et al., 2016). More frequently, researchers used ASEBA instruments to estimate the link between their scores and other psychological variables, like *impairments in the emotional domain* namely emotional instability (Caprara et al., 2017), alexithymia (Ballarotto et al., 2017; Cimino et al., 2018; Iannattone et al., 2021; Raffagnato et al., 2020) and emotional intelligence (D'amico

et al., 2017). Moreover, dimensions related to *neurodevelopmental and personality characteristics* -such as callous-unemotional, moral disengagement (Muratori et al., 2017b), attachment insecurity (Bizzi et al., 2019)- as well as a *specific aspect of the disease itself* - *e.g.*, perceived severity of specific learning disorder (D'amico et al., 2017), food addiction in adolescents with eating disorders (Cinelli et al., 2020), body uneasiness in gender dysphoric adolescents (Fisher et al., 2017), were all found to increase at higher emotional-behavioural problems displayed by clinical samples.

The literature on *at-risk* adolescents revealed positive associations between emotional-behavioural problems and factors related to family context, such as *family characteristics* (Balenzano et al., 2018), parental stress (Operto et al., 2018; Barone et al., 2016), maternal psychopathological symptoms (Pace et al., 2017), and low filial self-efficacy (Cerniglia et al., 2015). Moreover, emotional-behavioural problems were impacted by both *attachment-related difficulties* (Molina et al., 2014) and attachment insecurity (Bizzi, 2021; Muzi et al., 2020a). This relationship emerged in at-risk samples of adopted (Balenzano et al., 2018), teenagers with headaches (Barone et al., 2016), and adolescents in residential care (Muzi et al., 2020a). Lastly, replicating the findings of studies conducted on clinical adolescents, alexithymia was found to be associated with emotional behavioural problems (Muzi et al., 2020a; 2020b).

4. Discussion

For the first time, this systematic review and meta-analysis synthesized and updated information about emotional-behavioural problems of Italian clinical and at-risk adolescents, as assessed through the ASEBA questionnaires (Achenbach et al., 2016). Most studies were cross-sectional and involved clinical psychiatric adolescents (69%), particularly with eating disorders (ED, 28%) or behavioural disorders (17%). Of note, no included studies involved populations suffering from anxious and depressive disorders. This finding is quite surprising, considering that anxiety and depression are the most common mental health issues among adolescents (Silva et al., 2020). This implies both caution in the generalization of these metanalytic data, and the need to assess through the ASEBA Italian adolescents suffering from these most common disorders. The remaining third of studies involved at-risk samples, mainly with a risk related to physical impairment (56.2%) or biographic-related risk, such as being in adoption or residential care (37.5%). However, no disaster-related risk samples could be considered because of the out-of-inclusion criteria or due to the impossibility of retrieving necessary data in the few existing ones, *e.g.,* (Feo et al., 2014). Therefore, readers should approach results considering that they can be considered valid for most but not for all the subgroups stated in the introduction.

4.1 Meta-analytic levels of emotional-behavioural problems

Results for the first objective provide pooled data on average levels of emotional-behavioural problems in these populations. This can be of interest to clinicians and researchers working with adolescents with specific clinical or at-risk conditions, as it provides average values of each psychopathological dimension potentially associated with a certain established condition, *e.g.*, average values of anxious/depressive

symptoms in adolescents with eating disorders. Looking at clinical and at-risk populations, in both cases means of internalizing and externalizing problems, as well as those of the syndrome scales were quite similar, suggesting an equal distribution of all problem categories within each population. In these Italian clinical samples, results could empirically support the existence of complex pathways of comorbidity beyond the major diagnosis (Arcelus and Vostanis, 2005). This is the case especially for the clinical populations more represented in this review, *i.e.*, the ED populations, which often show both internalizing and externalizing difficulties (Herpertz-Dahlmann, 2015), and adolescents diagnosed with behavioural disorders, where comorbid anxiety and depression are quite common (Polier et al., 2012). Therefore, future studies are encouraged to investigate clusters of comorbidities and their treatment implications for each diagnosis, considering a broader range of symptoms beyond traditional co-occurrences, *e.g.*, not only anxious-depressive symptoms but also social problems in adolescents diagnosed with a Conduct Disorder (Polier et al., 2012).

Concerning at-risk adolescents, all pooled means resulted lower than those reported for clinical samples, but they appeared markedly higher than those reported for community samples in the first part of this review (Pace et al., 2023). Although a statistical comparison was not performed, these results seem to confirm that Italian adolescents belonging to the selected sub-populations are at-risk in all categories of symptoms, in line with the existing international literature (Hasan e Nicolaidis, 2020; Ma et al., 2022; Maclean et al., 2016; Peverill et al., 2021; Sieh et al., 2010). Italian adolescents belonging to these sub-groups seem to be in an intermediate position between the high-risk clinical populations and the low-risk community ones, and future three-group comparative research could substantiate this observation. Moreover, these results seem to support the ability of the ASEBA questionnaires to appropriately discriminate against adolescents requiring a diagnosis. There is a differentiation of levels of symptoms of clinical severity from those at risk, which not necessarily reach the criteria for a clinical diagnosis (Deckers et al., 2009; Janssens and Deboutte, 2009).

4.2 Gender and age differences

Results for the second objective provide information about the moderating role of demographics on levels of emotional-behavioural problems. Regarding gender, the absence of an effect in the clinical samples by the current systematic review contrasts with some gender-related effects found both in international clinical samples and in Italian community ones (Biederman et al., 2020; Pace et al., 2023).

Regarding the age effect, on the one hand, levels of CBCL and YSR externalizing problems of clinical adolescents decreased with the growth, in line with the international literature on community adolescents (Rescorla et al., 2012). On the other hand, the constellation of age-related effects differed between these Italian clinical samples and international clinical teenagers (Philipp et al., 2018). Moreover, comparing these data with those from Italian community groups, an opposite age-related effect was sometimes

observed, *e.g.*, a decrease in anxious-depressive and attentional problems with the age in clinical samples versus an increase in community ones (Pace et al., 2023).

Further, no age-related or gender-related effects were found in at-risk populations. This summed result contrasts with literature on international at-risk and community populations (Barroso et al., 2018; Campos et al., 2019; Rescorla et al., 2012), suggesting the heterogeneity of the populations included under the label "at-risk" as a possible reason for these absent results. However, it is also noteworthy that literature findings on the effects of the demographics are quite contrasting even within the same sub-group (i.e., adopted samples), sometimes revealing significant effects (Rodrigues et al., 2019), and other times none (Pace et al., 2018). This suggests the need for further subgroup-specific investigation to clarify the current unclarity.

Overall, these findings invite researchers and practitioners to implement an investigation into the role of these demographics on clinical adolescents' symptoms, settling with cautious expectations based on the knowledge of community peers.

4.3 Problems raised in the last decades, the influence of the pandemic, and study quality

The analyses for the third aim mostly did not reveal significant moderators.

Contrary to community samples (Pace et al., 2023), publication year was not a significant moderator, suggesting no increase or decrease in ASEBA emotional-behavioural levels in clinical and at-risk Italian adolescents (Blomqvist et al., 2019).

Moreover, no difference in problem levels of these adolescent populations between pre-pandemic and pandemic time was detected, overall settling these findings in open contrast with the literature suggestions (Blomqvist et al., 2019; Theberath et al., 2022). However, we retrieved only a limited number of studies conducted after the pandemic, hindering the possibility to carry out comparisons. In addition, the studies retrieved were conducted during the emergency whereas the impact of the pandemic environment on emotional-behavioural problems of vulnerable adolescents may have long-term consequences.

Lastly, levels of symptoms did not vary according to the study quality (ranging from low to medium), revealing an additional difference with the community review (Pace et al., 2023).

4.4 Discussion of the relationships with other outcomes

As far as the last aim is concerned, associations of emotional-behavioural problems with other outcomes of Italian clinical and at-risk adolescents were systematically reviewed, both to synthesize existing knowledge and to provide suggestions for future research.

Current Italian literature on the topic mainly investigated the relationships between adolescents' emotional-behavioural problems and several aspects of emotion regulation. Specifically, evidence confirms more internalizing and externalizing problems in clinical and at-risk adolescents who have an insecure or disorganized attachment (Balenzano et al., 2018; Muzi et al., 2020; Pace et al., 2017). This is in line with primary and meta-analytic findings (Cosenza et al., 2022; Madigan et al., 2016), and it attributes

a protective role to security in attachment against behavioural problems (Barone et al., 2016; Bizzi et al., 2019). Other findings in line with national and international literature (Ianattone et al., 2023; Braham et al., 2015; Honkalampi et al., 2009) connect more problems in both populations of adolescents along with higher alexithymia (Ballarotto et al., 2017; Gatta et al., 2017; Iannattone et al., 2021; Muzi et al., 2020; Raffagnato et al., 2020), impulsivity (Ballarotto et al., 2017) and general emotion instability (Caprara et al., 2017).

Alternatively, few studies deepen the role of family and parental characteristics (Balenzano et al., 2018; Barone et al., 2016; Operto et al., 2018), personality characteristics, *e.g.*, moral disengagement, self-efficacy, coping (Cerniglia et al., 2015; Muratori et al., 2016; Muratori et al., 2017), as well as body-related conditions which are able to increase the vulnerability (Fisher et al., 2017; Monteleone et al., 2020). However, these studies are too scarce to compare the results with the literature, suggesting that research should be implemented.

5. Limitations and future directions

As a first attempt to synthesize findings from the Italian literature on emotional-behavioural problems in clinical and at-risk Italian adolescents, this study has the strength of novelty and originality, but several limitations. First, the retrieved studies only employed the versions of the ASEBA instruments released in 2001, and there are no studies with the TRF, like in the community samples (Pace et al., 2023). Therefore, updates of this review should include studies with previous versions of the CBCL and YSR, and/or enlarge studies with other largely used measures such as the Strengths and Difficulties Questionnaire (Goodman, 2001).

Moreover, potentially there were more data on the topic, and not all of them were included because they were impossible to retrieve from the authors. Therefore, authors are encouraged to share datasets or information for future reviews. In particular, the overview of included studies shows a scarce presence of observations on clinical samples from Southern Italy, and on at-risk samples from Centre Italy, which can be implemented in the future. Further, because of the limited number of studies for each category and study heterogeneity, pooled means could not reliably be extracted for each diagnosis or for at-risk subgroup. Italian researchers are particularly called to implement research in these populations, allowing meta-analysis updates to be able to synthesize data in each sub-category.

Moreover, unexpected, or absent results concerning age and gender moderation effects may be due to difficulties in extracting necessary data from analyses from the studies, which often did not report age and gender differences, or authors did not provide statistical indexes when asked. Given that some of these effects have been found in clinical samples and that demographics play a relevant role according to the community literature, researchers are invited to report or share data on these variables. This will allow an investigation of their effects in clinical and at-risk populations, which can potentially be useful in targeting assessment and intervention. In this vein, the absence of results for the other moderators may

be due to study heterogeneity, the scarce number of studies in each category, or real differences between Italian clinical and at-risk adolescents because of variables still to be investigated. Lastly, the absence of results covering adolescents with autism or disaster-related risk calls for more research in this regard.

Data Availability Statement

The datasets generated and analysed during the current study are available by the corresponding author.

Conflict of interest statement

The authors report there are no competing interests to declare.

Authors' Contribution

CSP (first author), SM (last author): Protocol development; SM: Creation of search strategy; WM (fourth author), VB (fifth author): Study screening; GR (second author), WM, VB: Data extraction; WM, VB: Risk of bias assessment; SM, GR, WM, VB: Data analysis and write-up; GR, SM: Data validation; AF (third author): Visualization; CSP, SM, GR: Reviewing and editing completed manuscript: CSP, SM, GR, AF. All authors reviewed the results and approved the final version of the manuscript.

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DOI: 10.13129/2282-1619/mjcp-3989

Appendix A. Syntax used on all databases for systematic search

SCOPUS:

(ALL ("Child Behaviour Checklist" OR "CBCL 6-18" OR "Youth Self Report" OR "YSR" OR "Teacher Report Form" OR "TRF" OR "Questionario sul comportamento del giovane" OR "Achenbach System of Empirically Based Assessment" OR "ASEBA" OR " Questionario sul comportamento del bambino") AND ALL ("italian" OR "italy" OR "italiani" OR "italiana" OR "italiano" OR "Italia")) AND PUBYEAR > 2000 AND PUBYEAR < 2022 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "bk"))

EBSCO, including PsycInfo, PsycArticles and Behavioural Science Collection: ("child behaviour checklist for ages 6-18" OR "CBCL 6-18" OR "Youth Self Report" OR "YSR" OR "Teacher Report Form" OR "TRF" OR "Questionario sul comportamento del giovane" OR "Achenbach System of Empirically Based Assessment" OR "ASEBA" OR " Questionario sul comportamento del bambino") AND ("italian" OR "italy" OR "italiani" OR "italiana" OR "italiano" OR "Italia") FILTER AGE GROUPS (school age, adolescence, young adulthood); published 2001 to 2021

PUBMED:

("Child Behaviour Checklist" OR "CBCL 6-18" OR "Youth Self Report" OR "YSR" OR "Teacher Report Form" OR "TRF" OR "Questionario sul comportamento del giovane" OR "Achenbach System of Empirically Based Assessment" OR "ASEBA" OR " Questionario sul comportamento del bambino") AND ("italian" OR "italy" OR "italiani" OR "italiana" OR "italiano" OR "Italia") Applied filters: from 2001 to 2021; Child 6-12 years; Adolescent 13-18 years

WEB OF SCIENCES:

(TS = ("Child Behaviour Checklist 6-18" OR "CBCL" OR "Youth Self Report" OR "YSR" OR "Teacher Report Form" OR "TRF" OR "Questionario sul comportamento del giovane" OR "Achenbach System of Empirically Based Assessment" OR "ASEBA" OR " Questionario sul comportamento del bambino")) AND (TS = ("italian" OR "italy" OR "italiani" OR "italiana" OR "italiano" OR "Italia")) Timespan: 2001-2021. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI.

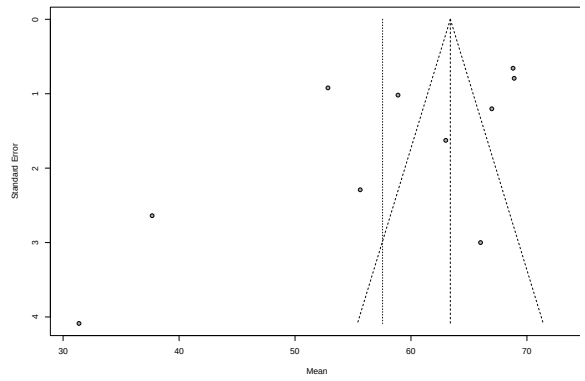
PROQUEST:

("child behaviour checklist for ages 6-18" OR "CBCL" OR "Youth Self Report" OR "YSR" OR "Teacher Report Form" OR "TRF" OR "Questionario sul comportamento del giovane" OR "Achenbach System of Empirically Based Assessment" OR "ASEBA" OR " Questionario sul comportamento del bambino") AND ("italian" OR "italy" OR "italiani" OR "italiana" OR "italiano" OR "Italia") Applied filters: 2001 to 2021; children & youth OR teenagers OR children OR adolescents OR adolescent OR child; Article OR Dissertation/Thesis OR Evidence Based Healthcare OR Report OR Undefined OR Working Paper/Pre-Print OR Conference

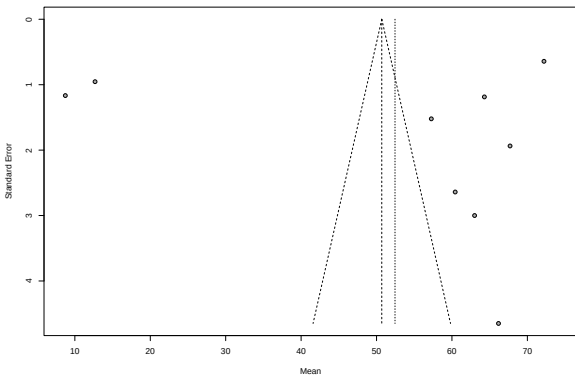
GOOGLE SCHOLAR

("child behaviour checklist for ages 6-18" OR "CBCL 6-18" OR "Youth Self Report" OR "YSR" OR "Teacher Report Form" OR "TRF 6-18" OR "ASEBA") AND ("italian" OR "italy" OR "italiani" OR "italiana" OR "italiano" OR "Italia")

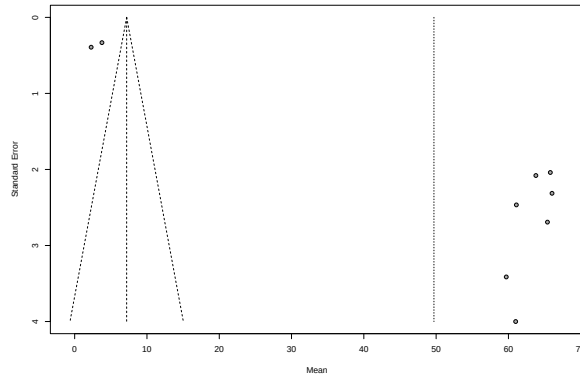
Appendix B. Funnel plots CBCL means in clinical samples



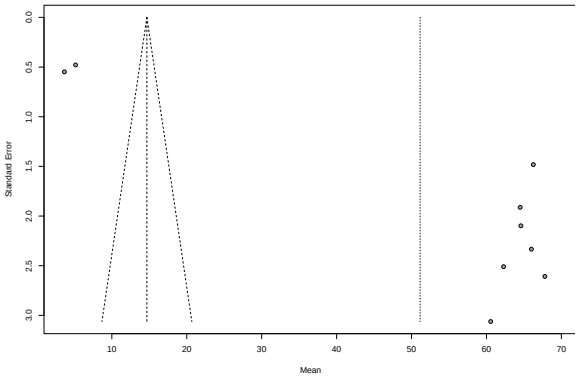
B1. CBCL Total



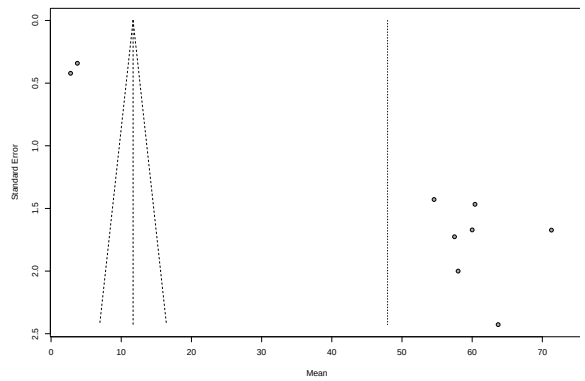
B2. CBCL Internalizing



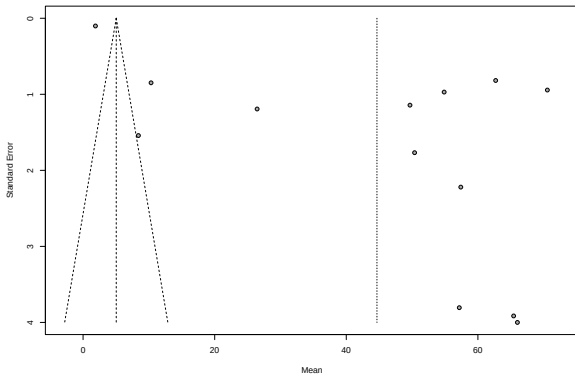
B2a. CBCL Withdrawn



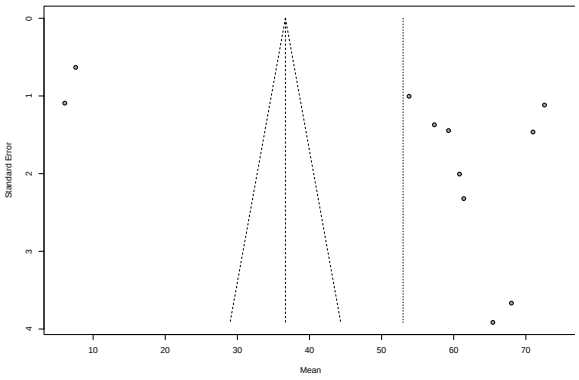
B2b. CBCL Anxiety



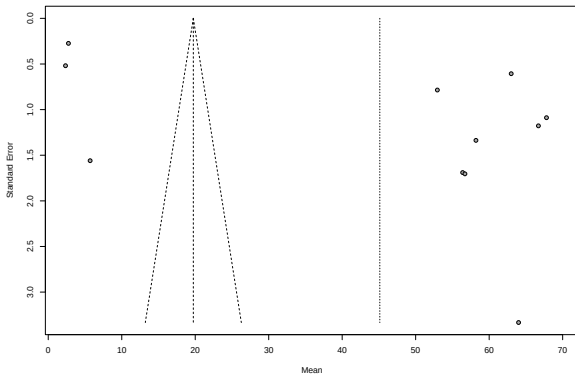
B2c. CBCL Somatic Complaints



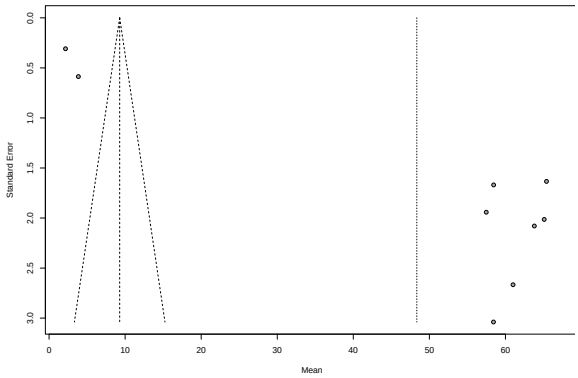
B3. CBCL Externalizing



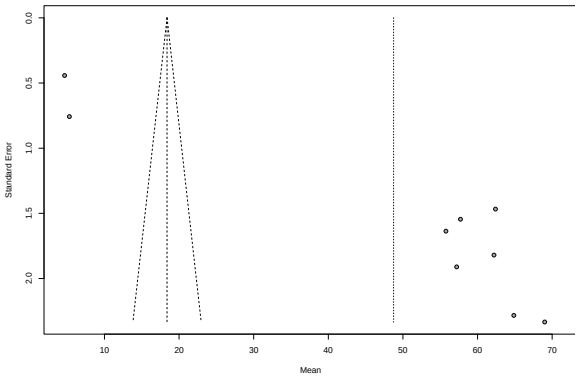
B3a. CBCL Aggressive behaviours



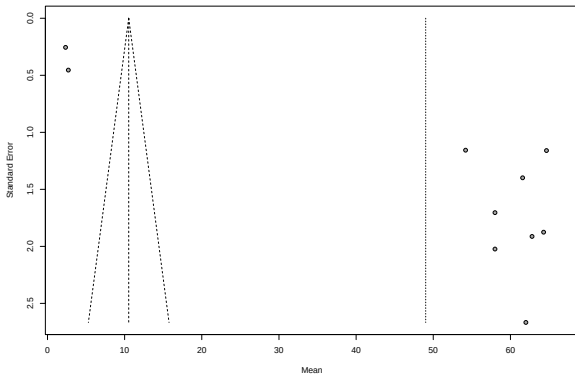
B3b. CBCL Rule breaking behaviours



B4. CBCL Thought problems

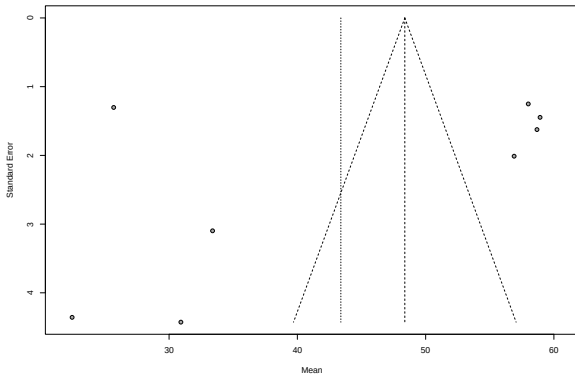


B5. CBCL Attention problems

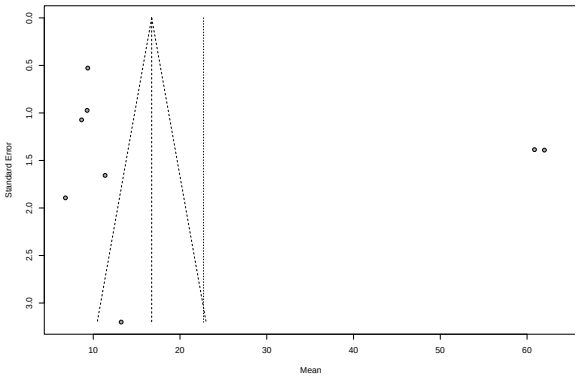


B6. CBCL Social problems

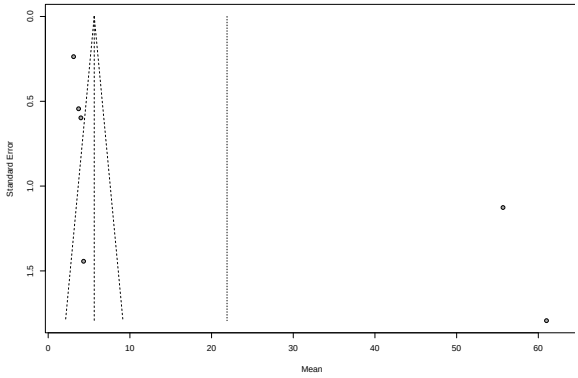
Appendix C. Funnel plots CBCL means in at-risk samples



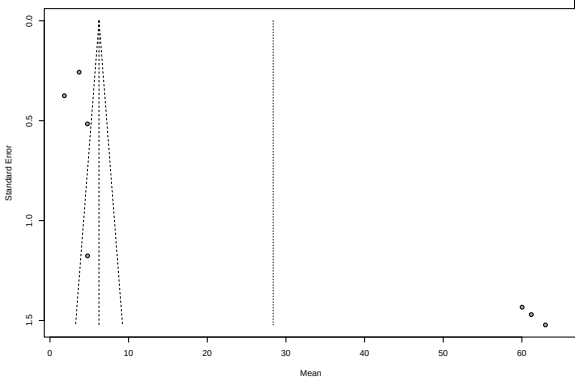
C1. CBCL Total



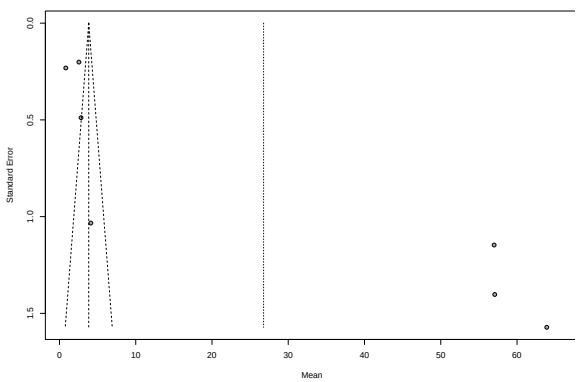
C2. CBCL Internalizing



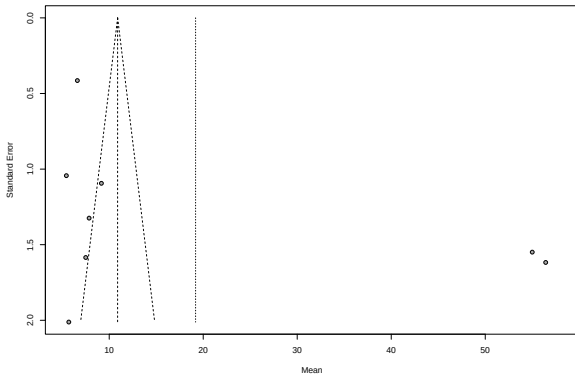
C2a. CBCL Withdrawn



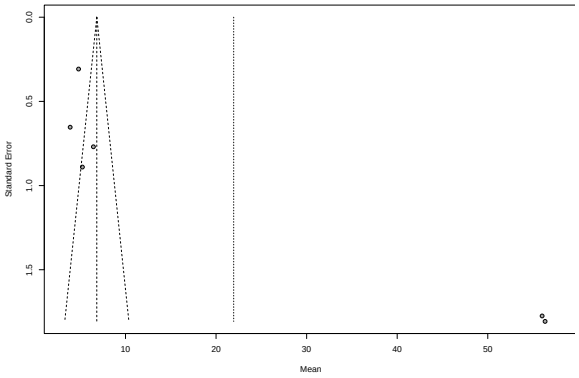
C2b. CBCL Anxiety



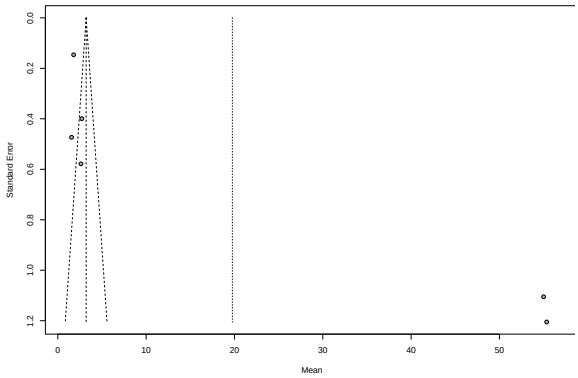
C2c. CBCL Somatic Complaints	



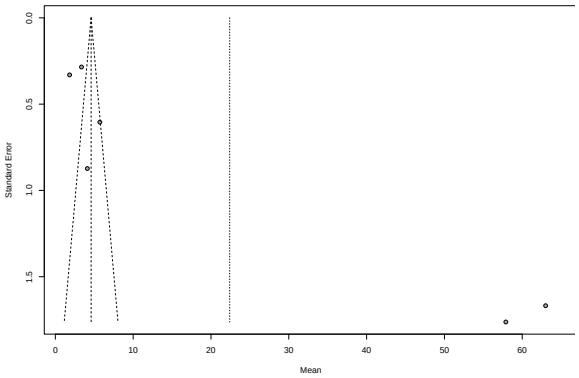
C3. CBCL Externalizing



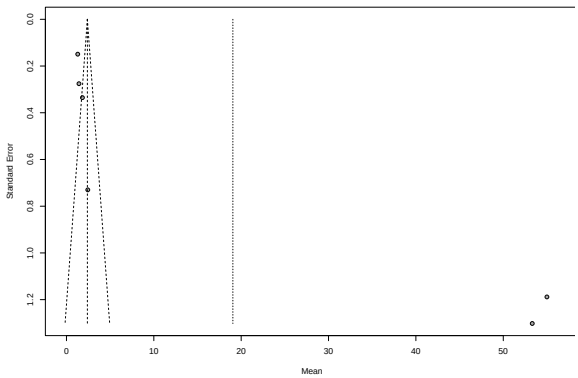
C3a. CBCL Aggressive behaviours



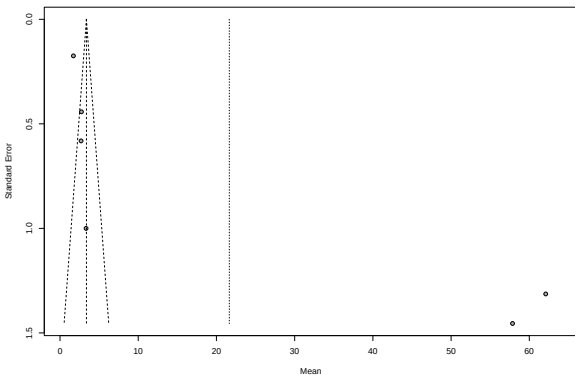
C3b. CBCL Rule breaking behaviours



C4. CBCL Attention problems

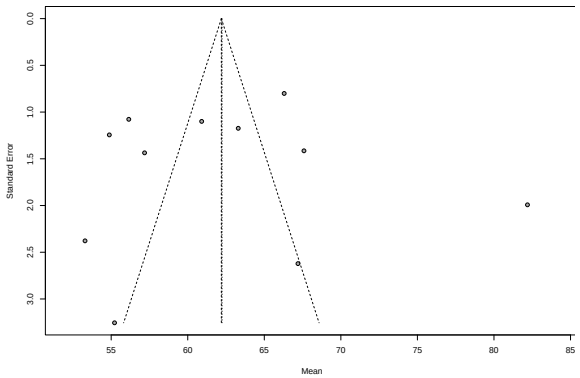


C5. CBCL Thought problems

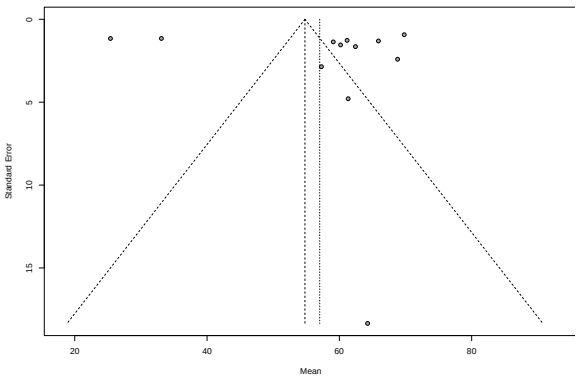


C6. CBCL Social problems

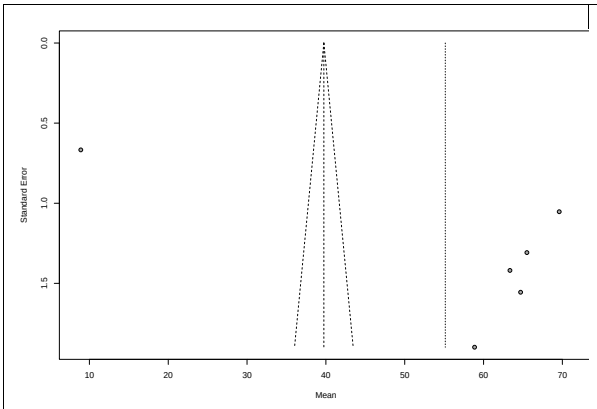
Appendix D. Funnel plots YSR means in clinical samples



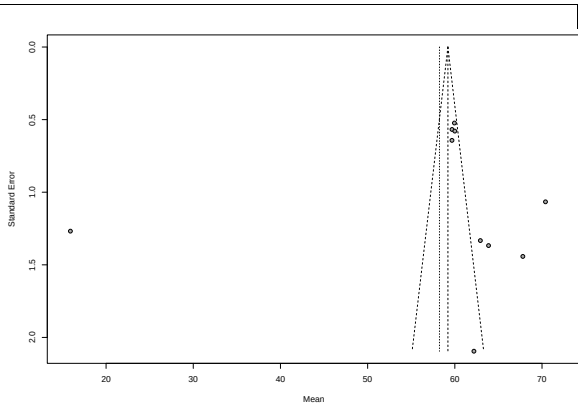
D1. YSR Total



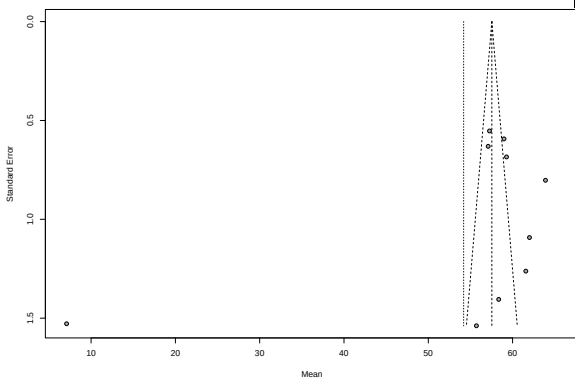
D2. YSR Internalizing



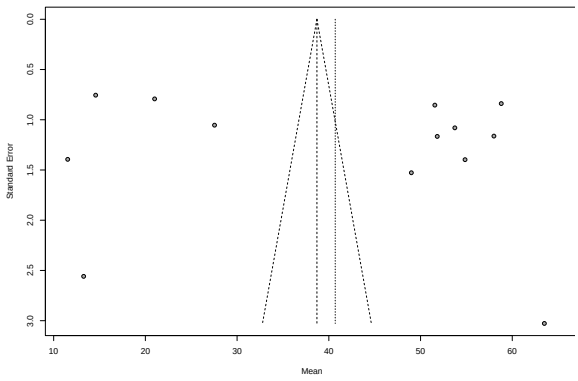
D2a. YSR Withdrawn



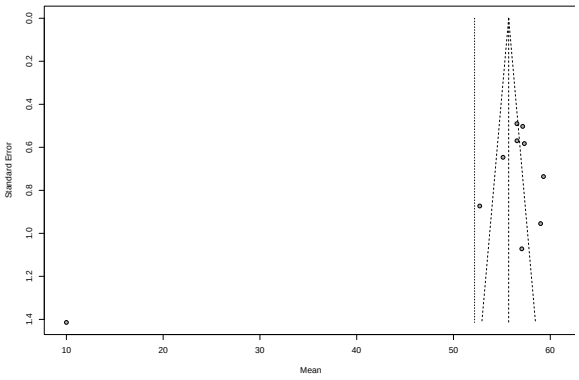
D2b. YSR Anxiety



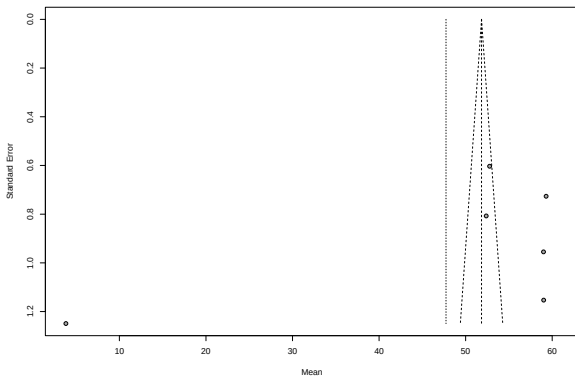
D2c. YSR Somatic Complaints



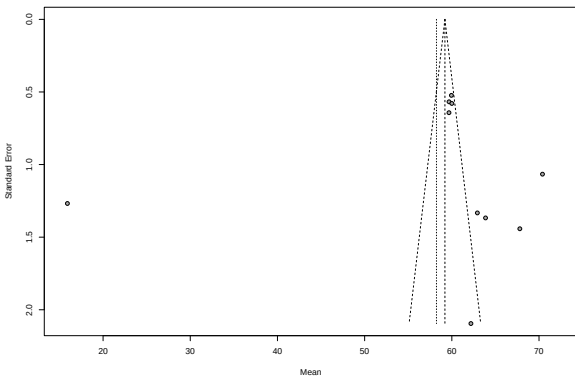
D3. YSR Externalizing



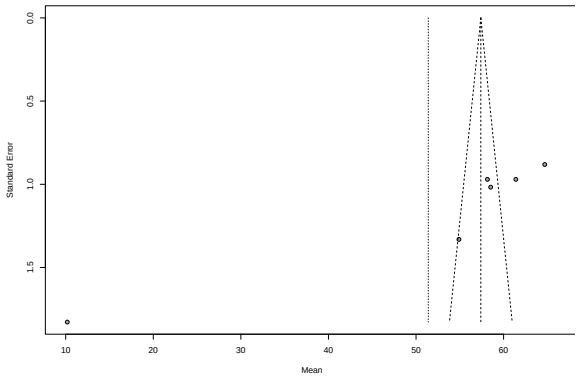
D3a. YSR Aggressive behaviours



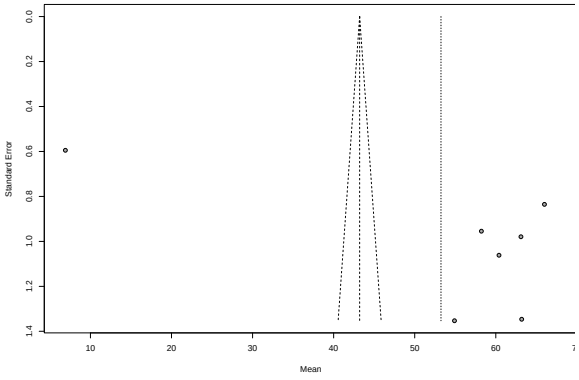
D3b. YSR Rule breaking behaviours



D4. YSR Attention problems

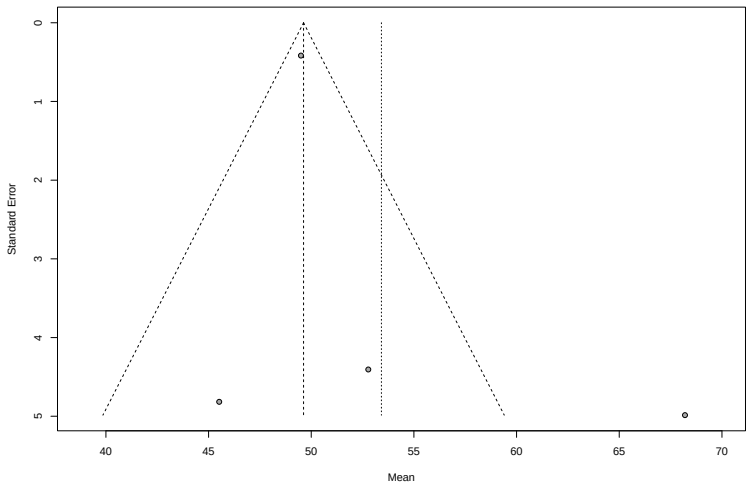


D5. YSR Thought problems

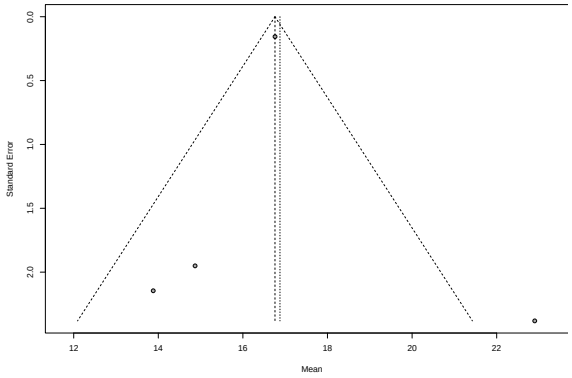


D6. YSR Social problems

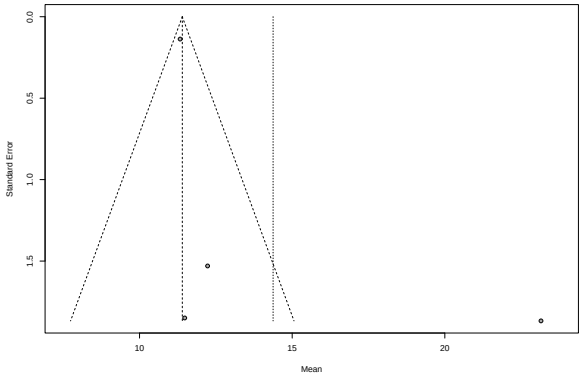
Appendix E. Funnel plots YSR means in at-risk samples.



E1. YSR Total



E2. YSR Internalizing



E3. YSR Externalizing

Appendix F. Non-significant moderators and clinical vs. at-risk comparison results

These data are in a repository accessible through this link https://osf.io/8rfst