

Original Article

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'Too many BeEPs in our teens!' Behavioral and emotional problems in a large group of Italian adolescents

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Abstract

Background. One in six adolescents suffers from mental health problems. Despite the presence of general information on Italian adolescents' mental health, researches conducted with standardized assessment tools are scarce in the literature. We evaluated the prevalence of self-reported behavioral and emotional problems in a group of Italian adolescents and examined their relation to socio-demographical variables.

Methods. This population-based sampling survey was conducted on high school students aged 14–18 from urban areas of Rome and Latina. Participants completed Youth Self-Report (YSR) and a socio-demographic schedule to collect information on age, gender, type of school attended, socio-economic status, urbanicity.

Results. Final sample consisted of 1400 adolescents (38.61% male, mean age 16 years, s.d. 1.42). Prevalence of Internalizing Problems, Externalizing Problems and Total Problems was 29.55%, 18.34% and 24.13%. In our multivariable model, Internalizing Symptoms were not explained by sociodemographic variables while Externalizing Symptoms were explained by Male Gender [OR = 1.53 (1.14–2.06)], older age [OR = 2.06 (1.52–2.79)] and attending a Technical and Professional Institute [OR = 2.15 (1.53–3.02)], with an adjusted $R^2 = 4.32\%$. Total Problems were explained by School Type [Technical and Professional Institutes and Art and Humanities *v.* Grammar and Science School; OR respectively 1.93 (1.40–2.67) and 1.64 (1.08–2.47)], adjusted $R^2 = 1.94$.

Conclusions. The study provides, for the first time, evidence of a great prevalence of self-reported behavioral and emotional problems in a large sample of Italian adolescents, highlighting the role of different socio-demographic variables as risk factors for externalizing behaviors. Our results emphasize the urgent need for implementing prevention programs on mental health in adolescence.

Introduction

Adolescence is a phase of vulnerability in which the majority of mental disorders begin: Paus and colleagues summarized this circumstance with the expression 'moving parts get broken', meaning that, in a phase of dynamic development, when not adequately overcame, the plurality of presenting challenges can increase the risk of the emergence of mental disorders (Paus, Keshavan, & Giedd, 2008).

A growing body of literature supports the hypothesis that adolescent and adult mental disorders are on a continuum (Canino, 2007; Christie *et al.*, 1988; Kessler *et al.*, 2007), with 50% of psychiatric disorders beginning during adolescence and 75% by the age of 24 (Kim-Cohen *et al.*, 2003), making early interventions extremely important.

According to WHO, at least one in six adolescents aged between 10 and 19 suffers from mental health problems, with suicide being the second cause of death for boys and girls aged between 15 and 19 years (Hawton, Saunders, & O'Connor, 2012). A European community-based study conducted across 11 countries reported a prevalence of 29% for depression and 32% for anxiety among adolescents (Balazs *et al.*, 2013). More recently, a large meta-analysis on 41 studies conducted in 27 countries estimated a worldwide-pooled prevalence of mental disorders in children and adolescents of 13.4%. More specifically, the worldwide prevalence of any anxiety disorder is 6.5%, 2.6% for any depressive disorder is 3.4% for attention-deficit hyperactivity disorder and 5.7% for any disruptive disorder is (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015).

Adolescents' mental disorders are associated with high rates of both alcohol (10.3%) and illicit drug (14.9%) abuse. In particular, alcohol and drug abuse were more frequent in those with a diagnosis of anxiety disorders (17.3% and 20%, respectively) or behavior disorders (15.6% and 24%, respectively) (Conway, Swendsen, Husky, He, & Merikangas, 2016). Moreover, non-suicidal behaviors are frequent among adolescents, as reported in both community and clinical samples, with lifetime prevalence rates between 17 and 60% according to different studies (Brown & Plener, 2017).

Authors that evaluated psychopathology using self-reported Behavioral and Emotional Problems (*BeEPs*) in adolescence (Heyerdahl, Kvernmo, & Wichstrom, 2004; Kapi, Veltsista, Sovio, Jarvelin, & Bakoula, 2007; Konowalek & Wolanczyk, 2018; Lee, Park, Cloninger, & Chae, 2018; Philipp et al., 2018; Rescorla et al., 2007; Tick, van der Ende, & Verhulst, 2008) highlighted an impact of a set of variables on the psychopathological dimensions examined. In particular, male gender was associated with externalizing problems, while female gender was associated with internalizing problems. The prevalence of mental disorders increases with age, involving about 10.2% (range 3.6%–24%) of children younger than 6, 13.2% of preadolescents (range 1.4%–30.7%) and 16.5% of adolescents (range 6.2%–41.3%) (Roberts, Attkisson, & Rosenblatt, 1998), low socioeconomic status has been associated with increased risk for externalizing problems, while urbanicity has been linked to a higher risk of developing thought disorders (Fett, Lemmers-Jansen, & Krabbendam, 2019).

According to the Italian National Institute of Statistics (ISTAT), in Italy 10% of young people aged between 12 and 25, report being globally dissatisfied about life, friendship, family and health (Statistica, 2018). Concerning risk factors for mental disorders, Italy is the European country with the highest percentage of adolescents who smoke (37%), with one of the largest percentage of adolescents with 'episodes of excessive consumption of alcohol (34% in 2015, fourth place in the EU) and with the second-largest share of teenagers who use cannabis (15% behind 17% in France) (Statistica, 2018).

Despite the presence of general information on Italian adolescents' mental health, provided by periodic epidemiological studies, researches conducted with standardized assessment tools are scarce in the scientific literature.

The Italian Preadolescent Mental Health Project (PrISMA) conducted an analysis on 3418 preadolescent subjects (10–14 years old) living in urban areas. The authors reported a prevalence of 9.8% (CI 8.8%–10.8%) of mental disorders using the child behavior checklist/6–18 (CBCL) and prevalence of 8.2% (CI 4.2%–12.3%) using the Development and Wellbeing Assessment diagnostic interview (DAWBA) (Frigerio et al., 2006, 2009). DSM-IV Emotional disorders were more common (6.5%) than externalizing disorders (1.2%) (Frigerio et al., 2009).

In 2012 Rescorla and colleagues reported in their paper on 44 countries a regional school-based Italian data about self-reported emotional and behavioral problems on 1224 students aged between 11 and 16 (Rescorla et al., 2012). In this study, the Youth Self Report Achenbach scale was used, and the Total Problem mean score was the highest (49.3) for Italian students when compared to other adolescents from different countries (Rescorla et al., 2012).

To our knowledge, no other Italian data on this topic is available and most epidemiological studies conducted in the USA (Achenbach et al., 1990; Achenbach, McConaughy, & Howell, 1987; Achenbach, Verhulst, Baron, & Althaus, 1987), and in

many other countries (Heyerdahl et al., 2004; Kapi et al., 2007; Konowalek & Wolanczyk, 2018; Lee et al., 2018; Philipp et al., 2018; Rescorla et al., 2007, 2013; Tick et al., 2008) are difficult to generalize as often based on convenience samples. The aim of this study is to evaluate self-reported *BeEPs* in a sample of Italian adolescents and to examine their association with important socio-demographical variables as gender, age, SES and urbanicity. In particular, we aim at testing the difference in terms of explanatory power of a socio-demographical model on different psychopathological outcomes.

Methods

Ten randomly chosen schools from the urban areas of Rome ($n = 5$) and Latina ($n = 5$) were invited to participate. Of these, eight schools provided consent to participate, three schools from Rome and five from Latina. For each school, a group of classes was randomly selected, according to the headmaster availability. A copy of the written informed consent was sent to the families of the students with the instruction to return this signed within 7–10 days. The students who joined the study were asked to complete a self-report questionnaire (1 h).

Sample

A sample of 1400 students aged 14–18 was recruited
We included:

- Subjects aged between 14 and 18 years old
- Subjects able to understand the purpose and procedures of the study and to give their consent to participation by signing the written consent statement
- Subjects for whom both parents could understand the purpose and procedures of the study and could give their consent to the participation of their son or daughter by signing the informed written consent statement.

Students who did not return after a week the informed consent signed by both parents were excluded from the study. This study was approved by our ethics committee in Policlinico Tor Vergata, Rome.

Procedure

In order to study different types of urban areas, we decided to randomly select a pool of schools from the areas of Rome (2 856 133 inhabitants) and Latina (126 746 inhabitants), a town located near Rome, whose schools also include boys and girls who live in small neighboring villages (<50 000 inhabitants).

Measures

Youth self-report (YSR)

Participants completed the Italian version of YSR investigating the presence and intensity of *BeEPs* in the sample (Achenbach & Rescorla, 2001). The Italian version of YSR contains 112 first-person items describing typical *BeEPs*; each item is assigned a score from 0 to 2. Subjects were asked to formulate their judgment considering the 6 months prior the assessment. YSR (Achenbach & Rescorla, 2001) evaluates eight narrow-band scales (Anxiety/Depression, Withdrawal/Depression, Somatic Complaints, Social Disorders, Thought Disorders, Attention Disorders, Delinquent

Table 1. Mean and s.d. of raw scores in YSR variables of interest, in total sample, clinical and non-clinical subsample for each variable

	<i>N</i>	%	Total sample <i>Mean (s.d.)</i>	Clinical <i>Mean (s.d.)</i>	Non-Clinical <i>Mean (s.d.)</i>
Withdrawn depressed	161	11.49	7.59 (4.48)	10.47 (1.63)	3.61 (2.28)
Anxious depressed	155	11.06	4.39 (3.12)	15.67 (3.13)	6.59 (3.49)
Somatic complaints	101	7.21	4.55 (3.16)	11.50 (2.38)	4.01 (2.51)
Social problems	66	4.71	3.81 (2.96)	11.66 (1.97)	3.42 (2.41)
Thought problems	83	5.92	4.68 (3.61)	13.86 (2.54)	4.11 (2.79)
Attention problems	135	9.64	6.43 (3.15)	12.38 (1.31)	5.80 (2.56)
Rule breaking	74	5.28	4.43 (3.71)	14.29 (2.07)	3.89 (2.93)
Aggressive behavior	109	7.78	8.60 (4.65)	19.02 (2.42)	7.73 (3.60)
Internalizing	414	29.55	16.54 (9.07)	27.32 (6.55)	12.03 (5.40)
Externalizing	257	18.34	13.04 (7.53)	25.52 (4.88)	10.25 (4.59)
Total Problems	338	24.13	49.65 (21.52)	78.58 (14.41)	40.52 (13.80)

The absolute number and percentage of the total sample of participants meeting the clinical criteria for clinical threshold are reported for each problem.

Behavior, Aggressive Behavior) and three broadband scales (Internalizing Disorders; Externalizing Disorders; Total Problem scale) as described by Achenbach and colleagues in the version published in 2001. In the original scoring system, YSR (Achenbach & Rescorla, 2001) variables are categorized in three levels (non-clinical, borderline and clinical), according to normative cut-off scores. For the present study, YSR scores were categorized as a binary variable merging 'non-clinical' with 'borderline' categories in order to compare individuals with definite psychological problems against individuals with uncertain or absent psychological problems.

Socio-demographic variables

Age and gender were recorded for each participant. Age was categorized as <16 years old and >16 years old. School type was categorized in three levels: technical and professional institutes; 'Liceo Artistico' (Art Lyceum) and 'Liceo Psicopedagogico' (Human sciences Lyceum); Liceo Classico (Grammar school) and Liceo Scientifico (Science Lyceum). Parental social class was defined by the highest parental occupation according to National Statistics Socio-economic Classification (NSSEC) and coded as follows: Lower, intermediate and managerial/professional occupations. Urbanicity was encoded considering hometown population, split into three categories: <50,000, between 50,000 and 500,000, and >500,000, the latter including the urban area of Rome.

Analysis

Descriptive statistics with mean and standard deviations or count and percentage were performed on YSR (Achenbach & Rescorla, 2001) narrow and broadband variables and socio-demographic variables. Univariable Logistic Regression was used to explore the association of individual socio-demographical characteristics on YSR (Achenbach & Rescorla, 2001) outcomes. Subsequently, a multivariable logistic regression model was fit for each YSR (Achenbach & Rescorla, 2001) outcome including all potential risk factor, in order to test the explanatory performance of each model using Pseudo R^2 and Akaike Information Criteria (AIC). For ordinal independent variables, the odds ratios are per category

increase. Analyses were conducted using Stata, version 13 (StataCorp, College Station, Tex.).

Sensitivity analysis

In order for unmeasured sources of bias or systematic error, a probabilistic Sensitivity Analysis (pSA) was carried out on the univariable and multivariable regression models. There are two main types of SA. pSA allows to specify probability densities for the bias parameters and use these densities to obtain simulation limits for the bias-adjusted exposure–disease relative risk, as opposite to deterministic SA that provides an external adjustment of the observed relative risk upon the specification of a list of hypothetical values for the bias parameters.

pSA was performed using the Stata command `episens`. With this command, the user needs to declare the probability distribution function (pdf) for the bias parameter rather than the actual value of the bias, as in the case of deterministic SA. Prior probability distributions for the bias parameters capture the uncertainty about those parameters and then use these distributions in a probabilistic SA.

Results

Descriptive statistics are reported in Table 1. Our final sample consisted of 1400 adolescents, of which 536 (38.61%) were male. Mean age was 16.00 years (s.d. 1.42). In our sample, 803 (57.32%) adolescents attended Science Lyceum or Grammar School, 398 (28.41%) attended Art or Human Sciences Lyceum, 199 (14.20%) attended technical or professional institutes. A total of 596 (42.54%) adolescents had a high parental social class, 415 (29.62%) had intermediate social class and 360 (25.70%) had lower social class.

Prevalence of clinical-rated psychological problems in our sample were as follows: Withdrawn-Depressed, 161 (11.49%); Anxious Depressed, 155 (11.06%); Somatic Complaints, 101 (7.21%); Social Problems, 66 (4.71%); Thought Problems, 83 (5.92%); Attention Problems, 135 (9.64%); Rule-Breaking, 74 (5.28%) Aggressive Behavior, 109 (7.78%). Internalizing

Problems were present in 414 (29.55%) individuals, Externalizing problems in 257 (18.34%). Total Problems were rated 'clinical' in 338 (24.13%).

Logistic regression ORs and 95% CIs are reported in Tables 2 and 3.

Univariable logistic regression

Male gender was negatively associated with Withdrawn-Depressed Problems [OR = 0.52 (0.36–0.75)] and Attention Problems [OR = 0.49 (0.33–0.74)], and positively associated with Somatic Complaints [OR = 1.58 (1.05–2.37)], Rule Breaking [OR = 2.99 (1.84–4.87)], Aggressive Behavior [OR = 1.72 (1.16–2.55)] and Externalizing Problems [OR = 1.48 (1.13–1.94)]. Compared to early adolescence (<16 years old), late adolescence (≥ 16 years old) was associated with Withdrawn-Depressed Problems [OR = 1.53 (1.09–2.16)] Rule Breaking [OR = 2.42 (1.42–4.12)], Externalizing [OR = 2.05 (1.53–2.73)] and Total problems [OR = 1.50 (1.17–1.93)]. Compared to smaller towns (<50,000 inhabitants) mid-sized urban areas (50,000–500,000 inhabitants) were negatively associated with Aggressive Behaviors [OR = 0.60 (0.37–.96)] and Externalizing Problems [OR = 0.70 (0.51–0.96)]. Compared to Grammar School and Science Lyceum, Art and Humanities Lyceum had higher odds of Social Problems [OR = 2.02 (1.04–3.89)], Attention Problems [OR = 2.17 (1.33–3.55)], Rule Breaking [OR = 2.10 (1.13–3.92)], Externalizing and Total Problems [respectively OR = 1.58 (1.07–2.34) and OR = 1.65 (1.16–2.35)]. Technical and Professional Institutes had higher Attention Problems [OR = 2.18 (1.46–3.25)], Aggressive Behaviors [OR = 1.96 (1.28–3.00)], Externalizing and Total Problems [respectively OR = 1.96 (1.45–2.65) and OR = 1.74 (1.32–2.29)]. Parental social class did not show any significant association with YSR (Achenbach & Rescorla, 2001) scores.

Multivariable logistic regression

In our Multivariable Logistic Regression Models, Withdrawn-depressed Symptoms were associated with gender [OR for male = 0.52 (0.35–0.77)] and Age [OR for late adolescence = 1.43 (1.00–2.05)], with an adjusted $R^2 = 1.91\%$. Anxious-depressed symptoms were not explained by our model, with an $R^2 = 0.52\%$. Somatic Complaints were associated with Gender [OR for male = 1.61 (1.05–2.47)] and Intermediate Parental Social Class [OR = 0.56 (0.33–0.95)], adjusted $R^2 = 2\%$. Social Problems and Thought Problems were not explained by our model, adjusted R^2 respectively, 2.31% and 1.06%. Attention Problems were associated with Gender [OR for male = 0.45 (0.28–0.72)], >500,000 Urban Area Population [OR = 2.27 (1.38–3.73)] and School Type [Technical and Professional Institutes and Art and Humanities VS Grammar and Science School OR respectively, 1.71 (1.08–2.70) and 2.28 (1.28–4.06)], adjusted $R^2 = 5.40\%$. Rule Breaking was associated with Gender [OR for male = 3.11 (1.86–2.48)], Late adolescence [OR = 2.26 (1.29–3.97)] School Type [Technical and Professional Institutes and Art and Humanities v. Grammar and Science School OR respectively, 2.36 (1.37–4.06) and 2.91 (1.40–6.05)] and Lower Parental social Class [OR = 0.44 (0.20–0.94)], adjusted $R^2 = 7.51\%$. Aggressive behavior was associated with Gender [OR for Male = 1.64% (1.09–2.48)] and school type [OR for Technical and Professional Institutes v. Grammar and Science School = 2.36 (1.30–3.24)], adjusted $R^2 = 3.41\%$. Finally, Internalizing Symptoms altogether were not explained by our model (adjusted

$R^2 = 0.31\%$), while Externalizing Symptoms were associated as a whole with Male Gender, older age and Technical and professional Institutes [OR respectively, 1.53 (1.14–2.06); 2.06 (1.52–2.79) and 2.15 (1.53–3.02)], with an Adjusted $R^2 = 4.32\%$. Total Problems were associated with School Type [Technical and Professional Institutes and Art and Humanities v. Grammar and Science School OR respectively, 1.93 (1.40–2.67) and 1.64 (1.08–2.47)], adjusted $R^2 = 1.94$.

Sensitivity analysis

SA was performed specifying uniform independent distributions of unobserved confounders, running a 20,000 replications simulation. pSA did not yield to materially different results, with 97.5/2.5 percentile ratios including random and systematic errors being greater than conventional 97.5/2.5 percentile (i.e. standard 95% CI) by no more than 0.25.

Discussion

The purpose of our study was to determine the prevalence of self-reported *BeEPs* in a group of Italian adolescents and to study their associated sociodemographic correlates in order to bring relevant information about adolescents' mental health in Italy. Our main finding is a relatively higher prevalence of psychological problems compared to previous reports. Secondly, we found that socio-demographical determinants of mental health have a higher impact on externalizing than internalizing symptoms. These aspects are discussed more in detail below.

Prevalence of *BeEPs*

Our main finding is a higher than expected rate of mental health problems: approximately one in four adolescents (24.13%) report a clinically relevant *BeEP*. Internalizing problems were more frequent (29.55%) than Externalizing problems (18.34%).

To the best of our knowledge, this is the first report on the prevalence of mental health problems in a general population sample aged 14–18 in Italy. Compared to previous international research that reports a prevalence of clinical Total Problems between 11% and 27% (Philipp et al., 2018; Robinson et al., 2018), our findings provide evidence of a higher prevalence of mental health problems in adolescence, with, in particular, a high prevalence of Internalizing Problems. The only previous Italian report is the PrISMA study, reporting a prevalence of 9.8% of mental disorders assessed with the child behavior checklist (CBCL/6–18) on 3418 pre-adolescents (10–14 years old) (Frigerio et al., 2009). Compared to this study, we report on different age groups, namely on high school students, while pupils aged 10–14 in Italy are attending what is commonly known as 'middle school'. Because 'Middle School' is a quite different environment compared to 'High School', and so are pupils attending to middle and high schools, our work adds an important piece of information about the prevalence of mental disorders and *BeEPs* in adolescence.

The reason for the higher prevalence of Total Problems in our sample may be due to an age effect at an individual level (see below for age-effect) and/or to macro-characteristics of the sampled population. Our results could moreover be due to an increasing trend in the prevalence of mental disorders in adolescents. Data on the same population at an earlier time are not available, but evidence of an increasing trend in the prevalence

Table 2. ORs and 95% CIs of univariate logistic regression models of socio-demographic variables on clinical variables of interest

	Male Ref. Female	50–500 k Ref. <50 K	>500 k	Late adoles. (>16 years) Ref <16 years	Istituti Ref. Liceo Classico e Scientifico	Art./pedag.	Intermediate NSSEC Ref. NNSEC Higher	Lower NSSEC
Withdrawn depressed	0.52*** (0.36–0.75)	1.16 (0.79–1.71)	0.99 (0.61–1.60)	1.53* (1.09–2.16)	0.88 (0.59–1.30)	1.39 (0.89–2.17)	1.10 (0.74–1.63)	1.03 (0.68–1.56)
Anxious depressed	1.16 (0.82–1.62)	0.98 (0.66–1.46)	1.22 (0.77–1.93)	1.12 (0.80–1.58)	0.77 (0.52–1.16)	1.03 (0.64–1.67)	1.13 (0.77–1.67)	0.82 (0.53–1.27)
Somatic complaints	1.58* (1.05–2.37)	0.96 (0.59–1.55)	1.21 (0.69–2.10)	1.30 (0.86–1.97)	1.07 (0.67–1.69)	0.99 (0.54–1.81)	0.69 (0.42–1.12)	0.63 (0.38–1.07)
Social problems	0.64 (0.37–1.11)	0.71 (0.40–1.26)	0.75 (0.37–1.52)	1.53 (0.91–2.56)	1.64 (0.94–2.87)	2.02* (1.04–3.89)	1.29 (0.74–2.28)	0.91 (0.48–1.74)
Thought problems	0.91 (0.57–1.45)	1.31 (0.77–2.26)	1.09 (0.55–2.13)	1.45 (0.91–2.29)	1.35 (0.82–2.24)	1.51 (0.82–2.79)	1.33 (0.79–2.23)	0.98 (0.55–1.76)
Attention problems	0.49*** (0.33–0.74)	0.67 (0.43–1.06)	1.46 (0.92–2.33)	1.00 (0.70–1.43)	2.18*** (1.46–3.25)	2.17** (1.33–3.55)	0.84 (0.53–1.32)	1.43 (0.94–2.18)
Rule breaking	2.99*** (1.84–4.87)	0.97 (0.56–1.67)	0.85 (0.43–1.70)	2.42** (1.42–4.12)	1.69 (0.99–2.87)	2.10* (1.13–3.92)	1.05 (0.61–1.80)	0.69 (0.36–1.31)
Aggressive Behavior	1.72** (1.16–2.55)	0.60* (0.37–0.96)	1.09 (0.66–1.81)	1.42 (0.95–2.13)	1.96** (1.28–3.00)	1.47 (0.82–2.61)	1.40 (0.88–2.23)	1.12 (0.68–1.87)
Internalizing	0.90 (0.71–1.14)	1.07 (0.81–1.40)	1.17 (0.84–1.62)	1.25 (0.99–1.58)	0.90 (0.69–1.18)	1.05 (0.75–1.47)	1.05 (0.80–1.37)	0.90 (0.67–1.20)
Externalizing	1.48** (1.13–1.94)	0.70* (0.51–0.96)	0.78 (0.53–1.14)	2.05*** (1.53–2.73)	1.96*** (1.45–2.65)	1.58* (1.07–2.34)	1.22 (0.88–1.69)	1.21 (0.86–1.70)
Total Problems	1.10 (0.86–1.42)	0.83 (0.62–1.11)	0.91 (0.64–1.29)	1.50** (1.17–1.93)	1.74*** (1.32–2.29)	1.65** (1.16–2.35)	1.08 (0.81–1.45)	1.09 (0.80–1.48)

Significant results are indicated in bold. OR, odds ratio; CI, confidence interval.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Table 3. ORs and 95% CIs of multivariable logistic regression models of socio-demographic variables on clinical variables of interest

	Male	Late adol. (>16 years)	Istituti	Art. /pedag.	Intermediate NSSEC	Lower NSSEC	50–500 k	>500 k	Model summary		
	Ref. Female	Ref <16 years	Ref. Liceo Classico e Scientifico	Ref. NNSEC Higher		Ref. <50 K			Pseudo R ²	AIC	Model significance
Withdrawn depressed	0.52** (0.35–0.77)	1.43* (1.00–2.05)	0.86 (0.55–1.37)	1.06 (0.62–1.81)	1.15 (0.76–1.74)	1.12 (0.69–1.81)	1.13 (0.76–1.70)	1.09 (0.66–1.79)	1.91%	912.03	0.0439
Anxious Depressed	1.20 (0.84–1.71)	1.08 (0.76–1.54)	0.80 (0.51–1.26)	1.19 (0.68–2.07)	0.98 (0.64–1.49)	0.91 (0.56–1.49)	0.90 (0.59–1.37)	1.22 (0.76–1.97)	0.52%	916.63	0.8687
Somatic complaints	1.61* (1.05–2.47)	1.36 (0.89–2.08)	1.31 (0.80–2.17)	1.32 (0.66–2.64)	0.56* (0.33–0.95)	0.60 (0.34–1.06)	0.99 (0.60–1.64)	1.42 (0.81–2.49)	2%	685.53	0.1408
Social problems	0.70 (0.40–1.24)	1.57 (0.90–2.74)	1.54 (0.84–2.84)	1.91 (0.91–3.98)	1.27 (0.70–2.30)	0.74 (0.36–1.55)	0.76 (0.43–1.34)	0.88 (0.44–1.78)	2.31%	496.58	0.3050
Thought problems	1.08 (0.66–1.78)	1.54 (0.94–2.53)	1.46 (0.80–2.66)	1.40 (0.67–2.92)	1.17 (0.67–2.02)	0.94 (0.49–1.81)	1.36 (0.77–2.39)	1.23 (0.63–2.37)	1.06%	565.84	0.6579
Attention problems	0.45*** (0.28–0.72)	1.13 (0.77–1.66)	1.71* (1.08–2.70)	2.28** (1.28–4.06)	0.74 (0.45–1.23)	1.07 (0.66–1.72)	0.80 (0.51–1.28)	2.27** (1.38–3.73)	5.4%	757.63	<0.00001
Rule breaking	3.11*** (1.86–5.22)	2.26** (1.29–3.97)	2.36** (1.37–4.06)	2.91** (1.40–6.05)	0.88 (0.49–1.58)	0.44* (0.20–0.94)	1.11 (0.65–1.91)	1.14 (0.56–2.30)	7.51%	492.99	<0.00001
Aggressive behavior	1.64* (1.09–2.48)	1.43 (0.93–2.19)	2.06** (1.30–3.24)	1.61 (0.80–3.26)	1.22 (0.75–1.97)	0.89 (0.52–1.51)	0.76 (0.46–1.25)	1.38 (0.79–2.39)	3.41%	690.38	0.0008
Internalizing	0.95 (0.74–1.23)	1.23 (0.96–1.57)	0.92 (0.67–1.25)	1.07 (0.72–1.58)	1.00 (0.75–1.34)	1.00 (0.72–1.38)	1.05 (0.78–1.40)	1.22 (0.86–1.71)	0.31%	1561.40	0.7551
Externalizing	1.53** (1.14–2.06)	2.06*** (1.52–2.79)	2.15*** (1.53–3.02)	1.59 (1.00–2.54)	1.05 (0.75–1.49)	0.95 (0.65–1.39)	0.86 (0.62–1.21)	1.00 (0.67–1.50)	4.32%	1175.39	<0.00001
Total problems	1.16 (0.88–1.51)	1.47** (1.12–1.92)	1.93*** (1.40–2.67)	1.64* (1.08–2.47)	0.94 (0.69–1.29)	0.84 (0.59–1.20)	0.99 (0.73–1.35)	1.18 (0.82–1.70)	1.94%	1391.51	0.0009

All the analyses were performed on the total sample ($N = 1275$). Significant results are indicated in bold. OR, odds ratio; CI, confidence interval; AIC, Akaike Information Criteria.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

of mental health problems in adolescence worldwide is growing. For example, a Polish study on 259 students aged 16 in 2000 reported a 14.4% prevalence of clinical Total Problem scale; 11 years later, in 2011 this percentage rose to 27.02% in an independent sample of the same age ($N = 185$) (Konowalek & Wolanczyk, 2018). Again, in the USA and in the UK, mental health problems in teens have been reported to be rising in the last 20 years (Collishaw, Maughan, Natarajan, & Pickles, 2010; Keyes, Gary, O'Malley, Hamilton, & Schulenberg, 2019; Mojtabai, Olfson, & Han, 2016). The YSR (Achenbach & Rescorla, 2001) mean Total problem score of this study is in the mid-range compared to mean scores observed in other European societies with mainly northern countries reporting lower mean scores compared to southern countries (Philipp et al., 2018). However, these data only allow an approximate comparison as the methodology of the studies varies regarding the included age range and the sampling frame.

Socio-demographic determinants of BeEPs

In this study, we selected a 'socio-demographic' explanatory model of BeEPs. As a whole, our model fits the data poorly, with R^2 values below 10% on each scale. However, our extended socio-demographic model has some explanatory power on externalizing scales. This evidence suggests that while internalizing dimensions may be better explained by different variables, socio-demographical factors could be considered as specific determinants of externalizing problems. In the following section, we will discuss such factors in detail.

Gender

Consistent with literature (Hicks et al., 2007) boys reported higher scores in Externalizing Problems showing, in particular, elevated scores in Rule-breaking behaviors and Aggressive behaviors, as well as higher scores on Somatic complaints. Consistently with previous research (Whiteford et al., 2013) girls had higher Withdrawn/Depressed problems and Attention Problems. No gender difference was observed in Internalizing Problems as a whole, as girls scored higher on Withdrawn/Depressed symptoms, and boys scored higher on Somatic Complaints, while Anxious/Depressed symptoms were equally distributed across genders. In our sample, boys scored higher than girls on somatic and externalizing problems: these two symptoms' group may have a common underpinning in males based on alexithymia, that may help to explain such association. Alexithymia has been shown to be associated with somatic complaints in clinical and non-clinical samples (Bach & Bach, 1996; Kusevic et al., 2013; Lundh & Simonsson-Sarnecki, 2001; Taycan, Ozdemir, & Erdogan Taycan, 2017; Taylor, Parker, Bagby, & Acklin, 1992). Because of the inability to communicate their feelings, people with high alexithymia are prone to communicate through their bodily sensations. A number of authors assume the existence of normative male alexithymia which consists in a subclinical version of alexithymia, highly associated with masculinity and commonly reported in boys (Levant & Parent, 2019; Sullivan, Camic, & Brown, 2015). Moreover, alexithymia was found to be more common among adolescents with severe behavioral problems (Gatta, Del Col, Testa, Svanellini, & Battistella, 2012; Manninen et al., 2011) and among adolescents with disruptive and delinquent behaviors (Manninen et al., 2011; Zimmermann, 2006), possibly

as a result of a deficit in cognitive processing and regulation of emotional states (Luminet, Rime, Bagby, & Taylor, 2004).

Age

In our sample, Total Problem scale scores were higher for subjects aged more than 16 years with a 50% higher probability of having a mental health problem compared to younger participants. In particular, in our sample, boys and girls older than 16 years old resulted to have higher scores in the narrow band syndromic scales Withdrawn/Depressed and Rule-breaking behavior and in the broadband scale Externalizing behaviors.

According to literature, the prevalence of mental disorders increases during the transition into adulthood (Kessler et al., 2007) with a twofold increase in mood disorders' prevalence from early to late adolescence (Merikangas et al., 2010).

Late adolescence is often described as a turbulent phase (Burnett & Blakemore, 2009), however, previous studies report conflicting results concerning age effects on YSR (Achenbach & Rescorla, 2001) scores. Verhulst and colleagues (Verhulst, Prince, Vervuurt-Poot, & de Jong, 1989) found a small age effect on Total Problem score with girls scoring higher with increasing age. In an Australian sample ($N = 1754$), the prevalence of clinical Total Problem raised between age 14 and 17 from 11.7% in boys and 13.0% in girls to 13.0% and 19.3%, respectively (Robinson et al., 2018). Achenbach et al. (1987), Fitzpatrick & Deehan (1999) and Verhulst et al. (1989) found no age effect on Total problems. Differences concerning age effects may depend on which ages are studied and if subjects are compared separately for each age or in age groups. Frigerio and colleagues in 2006 highlighted, in an Italian sample of preadolescents an increase of psychopathology in the older groups of subjects (13–14 years old girls) (Frigerio et al., 2009). However, these results are not fully comparable with ours as Frigerio and colleagues recruited preadolescents, subjects facing a much different period of life.

SES and school type

In contrast with previous literature, SES did not affect self-reported problems in our sample. This may be due to at least two different factors. Firstly, SES was assessed in our study taking into account the highest parental occupation, not considering other important SES-associated variables, such as parental education level or explicit questions about the actual income (Bowles & Gintis, 2002; Galobardes, Shaw, Lawlor, Lynch, & Smith, 2006; Smith, 2011). As a matter of fact, the distribution is skewed towards the upper class. The occupational category *per se* may not be a suitable proxy for SES as it may include heterogeneous jobs associated with different incomes. For example, a large portion of our sample's parental occupation belonged to the area of trade, that implies large differences in individual incomes, depending on the commercial area considered.

According to literature, a lower social position can represent a risk factor for developing depression, anxiety and psychological stress (Freeman et al., 2016; Lund & Cois, 2018). Moreover, an association between low SES and health status in young people has been described (Schreier & Chen, 2013). Finally, low SES, along with contextual familial co-factors, is a very strong risk factor for externalizing problems and poor global functioning (for a review, see Ackerman & Brown, 2006).

PrISMA study reported that low parental education (<10 years) was associated with a higher likelihood of CBCL caseness and

DSM-IV disorders. Secondary analyses indicated that the father's education was positively correlated with SES and annual household income, both were also associated with psychopathology (Frigerio et al., 2009). Further data are needed to understand to what extent parental occupation can be considered a fairly valid measure of SES in the Italian context. Although the logical sequence would be that to a low-skilled occupation corresponds a poor education and a low income (Lahelma, Martikainen, Laaksonen, & Aittomaki, 2004), recent important documented changes in our society altered this order: according to ISTAT although in Italy the employment advantages deriving from higher levels of education are similar to those recorded in the EU average, employment rates remain lower than in Europe. Families with a high-skilled occupation do not necessarily correspond to high educated families.

A precise comparison with other countries is not, therefore, completely possible considering the profoundly different economic context and the divergent social texture characterizing each country involved.

Although parental occupation did not show the expected association with *BeEPs*, the effect expected from SES was indeed carried by school type, that could be considered a better proxy for global SES in our sample. As also found in other countries characterized by tracked education systems (Dustmann, 2004; Kerckhoff, 2001), in Italy members of lower social classes are systematically under-represented in the academic-oriented school tracks (i.e. 'Licei') (Azzolini & Vergolini, 2014; Schizzerotto & Barone, 2006). Reports from ISTAT indeed (Ballarino, Bernardi, Requena, & Schadee, 2008) confirm an inequality in education access across different SES levels in Italy. The reasons for the strong co-segregation of school type and SES, and inequalities in education levels in Italy is beyond the scope of this paper. However, in our sample school type may be considered the best proxy indicator for SES, and in fact, it is associated with *BeEPs* typically associated with low SES in other studies (for a detailed investigation on education inequality in Italy, see Ballarino et al., 2008). Differences in prevalence of externalizing behaviors across schools is a finding of particular concern, as it may boost further inequality between social classes both in economic and morbidity terms.

Urbanicity

Urbanicity is a risk factor for mortality (House et al., 2000) and severe mental illness (van Os, Hanssen, Bijl, & Vollebergh, 2001). Previous researchers have noted that both lifetime and 12-month mood and anxiety disorders, as well as measures of psychological distress, were higher in urban *v.* rural areas (Dhingra, Strine, Holt, Berry, & Mokdad, 2009; Peen et al., 2007; Peen, Schoevers, Beekman, & Dekker, 2010).

However, rural individuals are also at risk for poorer mental health in part due to the increasing rates of drug use and distance from social and health services (Smalley, Warren, & Klibert, 2012; Weaver, Himle, Taylor, Matusko, & Abelson, 2015; Young, Havens, & Leukefeld, 2012).

According to univariate logistic regression analysis, adolescents in our sample who declared to live in a town inhabited by <50 k people scored higher in the narrow band scale evaluating Aggressive behavior and in the broadband scale evaluating Externalizing problems. When a multivariable logistic regression was performed, instead, these previously cited small effects disappeared and a strong correlation emerged: in contrast with previous literature, adolescents in our sample who declared to live

in a town inhabited by more than 500 k people did not report higher scores in the scale evaluating Thought problems, but they scored higher in the narrow band scale evaluating Attention problems. In this regard most of the studies in the literature that show an increase in the rate of schizophrenia in the urban population is conducted on adults, with therefore very different clinical manifestations from a teenage population. From a clinical point of view, psychopathological manifestations are much less defined in adolescence than in adulthood. It would also be advisable to use in the future a more in-depth evaluation that more thoroughly characterizes these symptoms of inattention that may be present transversely in different clinical pictures.

Limitations and strengths

Our study presents some limitations. Firstly, self-report measures were not confronted with the teacher- or parent-report measures, potentially introducing a reporting bias, especially for externalizing problems. Secondly, the need to have the informed consent signed by both parents represented a constraint that could have introduced a selection bias, as well as the voluntary participation basis. Further analysis will ascertain whether participation was predicted by other variables of interest. Thirdly, SES was assessed without taking into account a number of variables that may have helped to detail important effects, such as household income, local community average income or parental education. However, school type helped to compensate this lack of information, because, as discussed above, school type is closely linked to parental SES. Skewness of the SES distribution towards upper SES may have indeed hindered the generalizability of the results. Lastly, although substance abuse is screened by a single item of YSR (Achenbach & Rescorla, 2001), a more extensive assessment of substance abuse could have helped to ascertain any potential confounding effect in our results.

The main strength of our study is in its sample size that allowed a rather robust estimate of the prevalence of *BeEPs* in the target population and allowed us to partially mitigate any sampling bias. Concerning sampling, our study is of importance in epidemiological research as it allows a direct comparison of different urban/rural settings. Finally, our paper adds an important piece of information on the prevalence of *BeEPs* in the adolescent population in central Italy.

Conclusions

In conclusion, our study provides for the first time, an estimate of the prevalence of self-reported *BeEPs* in a large sample of Italian adolescents. The socio-demographic factors we explored are relevant in explaining externalizing symptoms more than internalizing dimensions, that may be better explained by different variables. The findings of the present study emphasize the urgent need for targeted prevention and the significance of implementing prevention strategies for adolescents in order to improve well-being and to reduce symptom progression.

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Conflict of interest. All authors report no conflicts of interest.

Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008

References

- Achenbach, T. M., Bird, H. R., Canino, G., Phares, V., Gould, M. S., & Rubio-Stipec, M. (1990). Epidemiological comparisons of Puerto Rican and U.S. Mainland children: Parent, teacher, and self-reports. *Journal of the American Academy of Child and Adolescent Psychiatry*, 29(1), 84–93. doi:10.1097/00004583-199001000-00014.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, 101(2), 213–232. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/3562706>.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-Age forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth and Families.
- Achenbach, T. M., Verhulst, F. C., Baron, G. D., & Althaus, M. (1987). A comparison of syndromes derived from the child behavior checklist for American and Dutch boys aged 6–11 and 12–16. *Journal of Child Psychology and Psychiatry*, 28(3), 437–453. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/3597566>.
- Ackerman, B. P., & Brown, E. D. (2006). Income poverty, poverty co-factors, and the adjustment of children in elementary school. *Advances in Child Development and Behavior*, 34, 91–129. doi:10.1016/s0065-2407(06)80005-4.
- Azzolini, D., & Vergolini, L. (2014). Tracking inequality and education policy. Looking for a recipe for the Italian case. *Scuola democratica*, 2 (maggio-agosto).
- Bach, M., & Bach, D. (1996). Alexithymia in somatoform disorder and somatic disease: A comparative study. *Psychotherapy and Psychosomatics*, 65(3), 150–152. doi:10.1159/000289067.
- Balazs, J., Miklosi, M., Keresztesy, A., Hoven, C. W., Carli, V., Wasserman, C., ... Wasserman, D. (2013). Adolescent subthreshold-depression and anxiety: Psychopathology, functional impairment and increased suicide risk. *Journal of Child Psychology and Psychiatry*, 54(6), 670–677. doi:10.1111/jcpp.12016.
- Ballarino, G., Bernardi, F., Requena, M., & Schadee, H. (2008). Persistent inequalities? Expansion of education and class inequality in Italy and Spain. *European Sociological Review*, 25(1), 123–138. doi:10.1093/esr/jcn031.
- Bowles, S., & Gintis, H. (2002). The inheritance of inequality. *Journal of Economic Perspectives*, 16(3), 3–30. doi:10.1257/089533002760278686.
- Brown, R. C., & Plener, P. L. (2017). Non-suicidal self-injury in adolescence. *Current Psychiatry Reports*, 19(3), 20. doi:10.1007/s11920-017-0767-9.
- Burnett, S., & Blakemore, S. J. (2009). The development of adolescent social cognition. *Values, Empathy, and Fairness across Social Barriers*, 1167, 51–56. doi:10.1111/j.1749-6632.2009.04509.x.
- Canino, G. (2007). 25 Years of child and adult psychiatric epidemiology studies in Puerto Rico. *Puerto Rico Health Sciences Journal*, 26(4), 385–394. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18246967>.
- Christie, K. A., Burke, J. D. Jr, Regier, D. A., Rae, D. S., Boyd, J. H., & Locke, B. Z. (1988). Epidemiologic evidence for early onset of mental disorders and higher risk of drug abuse in young adults. *American Journal of Psychiatry*, 145(8), 971–975. doi:10.1176/ajp.145.8.971.
- Collishaw, S., Maughan, B., Natarajan, L., & Pickles, A. (2010). Trends in adolescent emotional problems in England: A comparison of two national cohorts twenty years apart. *Journal of Child Psychology and Psychiatry*, 51(8), 885–894. doi:10.1111/j.1469-7610.2010.02252.x.
- Conway, K. P., Swendsen, J., Husky, M. M., He, J. P., & Merikangas, K. R. (2016). Association of lifetime mental disorders and subsequent alcohol and illicit drug use: Results from the national comorbidity survey-adolescent supplement. *Journal of the American Academy of Child and Adolescent Psychiatry*, 55(4), 280–288. doi:10.1016/j.jaac.2016.01.006.
- Dhingra, S. S., Strine, T. W., Holt, J. B., Berry, J. T., & Mokdad, A. H. (2009). Rural-urban variations in psychological distress: Findings from the Behavioral Risk Factor Surveillance System, 2007. *International Journal of Public Health*, 54, 16–22. doi:10.1007/s00038-009-0002-5.
- Dustmann, C. (2004). Parental background, secondary school track choice, and wages. *Oxford Economic Papers*, 56(2), 209–230.
- Fett, A. J., Lemmers-Jansen, I. L. J., & Krabbendam, L. (2019). Psychosis and urbanicity: A review of the recent literature from epidemiology to neurourbanism. *Current Opinion in Psychiatry*, 32(3), 232–241. doi:10.1097/YCO.0000000000000486.
- Fitzpatrick, C., & Deehan, A. (1999). Competencies and problems of Irish children and adolescents. *European Child & Adolescent Psychiatry*, 8(1), 17–23. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/10367737>.
- Freeman, A., Tyrovolas, S., Koyanagi, A., Chatterji, S., Leonardi, M., Ayuso-Mateos, J. L., ... Haro, J. M. (2016). The role of socio-economic status in depression: Results from the COURAGE (aging survey in Europe). *BMC Public Health*, 16, 1098. doi:ARTN 1098 10.1186/s12889-016-3638-0.
- Frigerio, A., Rucci, P., Goodman, R., Ammaniti, M., Carlet, O., Cavolina, P., ... Molteni, M. (2009). Prevalence and correlates of mental disorders among adolescents in Italy: The PrISMA study. *European Child & Adolescent Psychiatry*, 18(4), 217–226. doi:10.1007/s00787-008-0720-x.
- Frigerio, A., Vanzin, L., Pastore, V., Nobile, M., Giorda, R., Marino, C., ... De Girolamo, G. (2006). The Italian preadolescent mental health project (PrISMA): Rationale and methods. *International Journal of Methods in Psychiatric Research*, 15(1), 22–35. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/16676683>.
- Galobardes, B., Shaw, M., Lawlor, D. A., Lynch, J. W., & Smith, G. D. (2006). Indicators of socioeconomic position (part 2). *Journal of Epidemiology and Community Health*, 60(2), 95–101. doi:10.1136/jech.2004.028092.
- Gatta M, I. N., Del Col, L., Testa, P. C., Svanellini, L., & Battistella, P. A. (2012). Alexithymia and psychopathology in adolescence: A case-control study. *Psichiatria dell'infanzia e adolescenza*, 79, 547–567.
- Hawton, K., Saunders, K. E., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *Lancet (London, England)*, 379(9834), 2373–2382. doi:10.1016/S0140-6736(12)60322-5.
- Heyerdahl, S., Kvernmo, S., & Wichstrom, L. (2004). Self-reported behavioural/emotional problems in Norwegian adolescents from multiethnic areas. *European Child & Adolescent Psychiatry*, 13(2), 64–72. doi:10.1007/s00787-004-0359-1.
- Hicks, B. M., Blonigen, D. M., Kramer, M. D., Krueger, R. F., Patrick, C. J., Iacono, W. G., & McGue, M. (2007). Gender differences and developmental change in externalizing disorders from late adolescence to early adulthood: A longitudinal twin study. *Journal of Abnormal Psychology*, 116(3), 433–447. doi:10.1037/0021-843x.116.3.433.
- House, J. S., Lepkowski, J. M., Williams, D. R., Mero, R. P., Lanz, P. M., Robert, S. A., & Chen, J. M. (2000). Excess mortality among urban residents: How much, for whom, and why? *American Journal of Public Health*, 90(12), 1898–1904. doi:10.2105/Ajph.90.12.1898.
- Kapi, A., Veltsista, A., Sovio, U., Jarvelin, M. R., & Bakoula, C. (2007). Comparison of self-reported emotional and behavioural problems in adolescents from Greece and Finland. *Acta Paediatrica*, 96(8), 1174–1179. doi:10.1111/j.1651-2227.2007.00370.x.
- Kerckhoff, A. C. (2001). Education and social stratification processes in comparative perspective. *Sociology of Education*, 74, 3–18.
- Kessler, R. C., Angermeyer, M., Anthony, J. C., De Graaf, R., Demyttenaere, K., Gasquet, I., ... Ustun, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry*, 6(3), 168–176. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18188442>.
- Keyes, K. M., Gary, D., O'Malley, P. M., Hamilton, A., & Schulenberg, J. (2019). Recent increases in depressive symptoms among US adolescents: Trends from 1991 to 2018. *Social Psychiatry and Psychiatric Epidemiology*, 54(8), 987–996. doi:10.1007/s00127-019-01697-8.
- Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: Developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry*, 60(7), 709–717. doi:10.1001/archpsyc.60.7.709.
- Konowalek, L., & Wolanczyk, T. (2018). Changes in emotional and behavioral problems between 2000 and 2011 Among 16-year-old polish children: A

- cross-sectional study. *Child Psychiatry & Human Development*, 49(5), 757–765. doi:10.1007/s10578-018-0791-y.
- Kusevic, Z., Civljak, M., Rukavina, T. V., Babic, G., Loncar, M., Cusa, B. V., & Gregurek, R. (2013). The connection between alexithymia and somatic morbidity in a population of combat veterans with chronic PTSD. *Acta Informatica Medica*, 21(1), 7–11. doi:10.5455/AIM.2013.21.7-11.
- Lahelma, E., Martikainen, P., Laaksonen, M., & Aittomaki, A. (2004). Pathways between socioeconomic determinants of health. *Journal of Epidemiology and Community Health*, 58(4), 327–332. doi:10.1136/jech.2003.011148.
- Lee, S. J., Park, S. H., Cloninger, C. R., & Chae, H. (2018). Behavior problems and personality in Korean high school students. *PeerJ*, 6, e6106. doi:10.7717/peerj.6106.
- Levant, R. F., & Parent, M. C. (2019). The development and evaluation of a brief form of the Normative Male Alexithymia Scale (NMAS-BF). *Journal of Counseling Psychology*, 66(2), 224–233. doi:10.1037/cou0000312.
- Luminet, O., Rime, B., Bagby, R. M., & Taylor, G. J. (2004). A multimodal investigation of emotional responding in alexithymia. *Cognition & Emotion*, 18(6), 741–766. doi:10.1080/02699930341000275.
- Lund, C., & Cois, A. (2018). Simultaneous social causation and social drift: Longitudinal analysis of depression and poverty in South Africa. *Journal of Affective Disorders*, 229, 396–402. doi:10.1016/j.jad.2017.12.050.
- Lundh, L. G., & Simonsson-Sarnecki, M. (2001). Alexithymia, emotion, and somatic complaints. *Journal of Personalized Medicine*, 69(3), 483–510. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/11478734>.
- Manninen, M., Therman, S., Suvisari, J., Ebeling, H., Moilanen, I., Huttunen, M., & Joukamaa, M. (2011). Alexithymia is common among adolescents with severe disruptive behavior. *The Journal of Nervous and Mental Disease*, 199(7), 506–509. doi:10.1097/NMD.0b013e3182214281.
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. Adolescents: Results from the National Comorbidity Survey Replication--Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(10), 980–989. doi:10.1016/j.jaac.2010.05.017.
- Mojtabai, R., Olfson, M., & Han, B. (2016). National trends in the prevalence and treatment of depression in adolescents and young adults. *Pediatrics*, 138(6). doi:10.1542/peds.2016-1878.
- Paus, T., Keshavan, M., & Giedd, J. N. (2008). Why do many psychiatric disorders emerge during adolescence? *Nature Reviews Neuroscience*, 9(12), 947–957. doi:10.1038/nrn2513.
- Peen, J., Dekker, J., Schoevers, R. A., ten Have, M., de Graaf, R., & Beekman, A. T. (2007). Is the prevalence of psychiatric disorders associated with urbanization? *Social Psychiatry and Psychiatric Epidemiology*, 42(12), 984–989. doi:10.1007/s00127-007-0256-2.
- Peen, J., Schoevers, R. A., Beekman, A. T., & Dekker, J. (2010). The current status of urban-rural differences in psychiatric disorders. *Acta Psychiatrica Scandinavica*, 121(2), 84–93. doi:10.1111/j.1600-0447.2009.01438.x.
- Philipp, J., Zeiler, M., Waldherr, K., Truttmann, S., Dur, W., Karwautz, A. F. K., & Wagner, G. (2018). Prevalence of emotional and behavioral problems and subthreshold psychiatric disorders in Austrian adolescents and the need for prevention. *Social Psychiatry and Psychiatric Epidemiology*, 53(12), 1325–1337. doi:10.1007/s00127-018-1586-y.
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, 56(3), 345–365. doi:10.1111/jcpp.12381.
- Rescorla, L., Achenbach, T. M., Ivanova, M. Y., Dumenci, L., Almqvist, F., Bilenberg, N., ... Verhulst, F. (2007). Epidemiological comparisons of problems and positive qualities reported by adolescents in 24 countries. *Journal of Consulting and Clinical Psychology*, 75(2), 351–358. doi:10.1037/0022-006X.75.2.351.
- Rescorla, L. A., Ginzburg, S., Achenbach, T. M., Ivanova, M. Y., Almqvist, F., Begovac, I., ... Verhulst, F. C. (2013). Cross-informant agreement between parent-reported and adolescent self-reported problems in 25 societies. *Journal of Clinical Child & Adolescent Psychology*, 42(2), 262–273. doi:10.1080/15374416.2012.717870.
- Rescorla, L., Ivanova, M. Y., Achenbach, T. M., Begovac, I., Chahed, M., Drugli, M. B., ... Zhang, E. Y. (2012). International epidemiology of child and adolescent psychopathology ii: Integration and applications of dimensional findings from 44 societies. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51(12), 1273–1283, e1278. doi:10.1016/j.jaac.2012.09.012.
- Roberts, R. E., Attkisson, C. C., & Rosenblatt, A. (1998). Prevalence of psychopathology among children and adolescents. *American Journal of Psychiatry*, 155(6), 715–725. doi:10.1176/ajp.155.6.715.
- Robinson, M., Doherty, D. A., Cannon, J., Hickey, M., Rosenthal, S. L., Marino, J. L., & Skinner, S. R. (2018). Comparing adolescent and parent reports of externalizing problems: A longitudinal population-based study. *British Journal of Developmental Psychology*, 37(2), 247–268. doi:10.1111/bjdp.12270..
- Schizzerotto, A., & Barone, C. (2006). *Sociologia dell'istruzione (Il Mulino Ed.)*. Bologna: Il Mulino.
- Schreier, H. M., & Chen, E. (2013). Socioeconomic status and the health of youth: A multilevel, multidomain approach to conceptualizing pathways. *Psychological Bulletin*, 139(3), 606–654. doi:10.1037/a0029416.
- Smalley, K. B., Warren, J. C., & Klibert, J. (2012). Health risk behaviors in insured and uninsured community health center patients in the rural US South. *Rural and Remote Health*, 12(4), Retrieved from <Go to ISI>://WOS:000318413700014.
- Smith, L. (2011). Experiential 'hot' knowledge and its influence on low-SES students' capacities to aspire to higher education. *Critical Studies in Education*, 52(2), 165–177. doi:10.1080/17508487.2011.572829.
- Statistica, I. I. N. d. (2018). Mental Health in various stages of life.
- Sullivan, L., Camic, P. M., & Brown, J. S. (2015). Masculinity, alexithymia, and fear of intimacy as predictors of UK men's attitudes towards seeking professional psychological help. *British Journal of Health Psychology*, 20(1), 194–211. doi:10.1111/bjhp.12089.
- Taycan, O., Ozdemir, A., & Erdogan Taycan, S. (2017). Alexithymia and somatization in depressed patients: The role of the type of somatic symptom attribution. *Nöropsikiyatri Arşivi*, 54(2), 99–104. doi:10.5152/npa.2016.12385.
- Taylor, G. J., Parker, J. D., Bagby, R. M., & Acklin, M. W. (1992). Alexithymia and somatic complaints in psychiatric out-patients. *Journal of Psychosomatic Research*, 36(5), 417–424. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/1619582>.
- Tick, N. T., van der Ende, J., & Verhulst, F. C. (2008). Ten-year trends in self-reported emotional and behavioral problems of Dutch adolescents. *Social Psychiatry and Psychiatric Epidemiology*, 43(5), 349–355. doi:10.1007/s00127-008-0315-3.
- van Os, J., Hanssen, M., Bijl, R. V., & Vollebergh, W. (2001). Prevalence of psychotic disorder and community level of psychotic symptoms - An urban-rural comparison. *Archives of General Psychiatry*, 58(7), 663–668. doi:10.1001/archpsyc.58.7.663.
- Verhulst, F. C., Prince, J., Vervuurt-Poot, C., & de Jong, J. (1989). Mental health in Dutch adolescents: Self-reported competencies and problems for ages 11–18. *Acta Psychiatrica Scandinavica*, 356(Supplementum), 1–48. <https://www.ncbi.nlm.nih.gov/pubmed/2618795>.
- Weaver, A., Himle, J. A., Taylor, R. J., Matusko, N. N., & Abelson, J. M. (2015). Urban vs rural residence and the prevalence of depression and mood disorder Among African American Women and Non-Hispanic White Women. *JAMA Psychiatry*, 72(6), 576–583. doi:10.1001/jamapsychiatry.2015.10.
- Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., ... Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. *Lancet (London, England)*, 382(9904), 1575–1586. doi:10.1016/S0140-6736(13)61611-6.
- Young, A. M., Havens, J. R., & Leukefeld, C. G. (2012). A comparison of rural and urban nonmedical prescription opioid users' lifetime and recent drug use. *American Journal of Drug and Alcohol Abuse*, 38(3), 220–227. doi:10.3109/00952990.2011.643971.
- Zimmermann, G. (2006). Delinquency in male adolescents: The role of alexithymia and family structure. *Journal of Adolescence*, 29(3), 321–332. doi:10.1016/j.adolescence.2005.08.001.