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Psychological distress and its correlates in secondary school students in Pavia, Italy

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Abstract. Adolescence is a time of social as well as biological transition; nevertheless, there are very few epidemiological studies in this field in Italy. Therefore, we felt it would be useful to conduct a cross-sectional study on a sample of 1346 adolescents aged 14–19 years attending high schools in the Health Authority Area of Pavia (northern Italy) through a multi-dimensional approach, taking into consideration physical and psychological health, life habits, family environment and social life of teen-agers. We used a structured self-administered questionnaire consisting of 264 question items to achieve the study aim, which was to find the variables (among personal data, scholastic, family, relational characteristics and habits) correlated with psychological distress. The results showed that in this sample psychological distress (evaluated by GHQ-30) was significatively ($p < 0.005$) associated with female sex, problems with school friends and teachers, having at least one immigrant parent (from a region different from that of residence), little love for parents and poor parental psycho-physical health status, staying at home on the weekend, smoking and using psychoactive medicines.

Key words: Adolescent, Family, General Health Questionnaire (GHQ), Habits, Relationships, Scholastic

Introduction

Adolescence is a time of social and biological transition, characterized by its own pressures, cultural constraints and modes of behavior. Some studies have found a greater number of symptoms of psychological distress and depression in teen-age girls than in boys [1–4], as well as an association between a state of depression or anxiety and the use of alcohol, tobacco, drugs and psychoactive medicines [5–6].

Often conflicting conclusions have been drawn regarding the role played by the family in the life of adolescent. For example, living in a family in which the parents are divorced or separated is associated with more severe depression or psychological distress [7]. However, other studies have reported that family conflict and lack of family unity rather than the separation or divorce of the parents have negative effects on the psychological health of the children [1, 8–9]. Nor is the role of socio-economic status (SES) very clear, perhaps because the term 'SES' does not always mean the same thing [10]: for instance, studies by Gore et al. [3] and Reinherz et al. [11] have found a connection between a low SES and higher depression levels, contrary to what was reported by D'Arcy and Siddique [1], Rubin et al. [9], and by Monck et al. [12].

During adolescence relationships shift and become more intimate, while at the same time dependency on family decreases. In this regard, many authors have noted that adolescents who spend their free time with friends, participate in sports activities, and meet new people have a lower level of psychological distress [1, 3, 9].

School is normally considered to be a source of tension for adolescents; in fact, the study by Monck et al. [12] reveals lower scores for feeling depressed in girls who left school and went to work than in those who remained in school. A good scholastic record is generally associated with lower scores for depression and psychological distress [9], as well as for GHQ [1] and somatic symptoms [13].

Very few studies have been conducted in this field in Italy. For this reason we felt it would be useful to carry out a cross-sectional study on a sample of adolescents in an Italian health care area.

The specific aim of the present research is to determine and examine, in a sample of secondary school students living in northen Italy, the relationship between self-reported psychological distress and some variables traditionally considered to be linked to distress (such as sex, age, social and scholastic characteristics, family and peer life, physical status, habits).

Methods

The sample and study setting. This cross-sectional study involved a sample of 1346 students attending high schools in Pavia, a medium-sized (75,000 inhabitants) northen Italian city. Currently, Pavia has above all a tertiary economy (trading and service industries) without a large manufacturing sector, while in the past the major economic base of the city was agriculture (rice and grain production). It is also an important cultural center with a famous old university and a medical school.

The Italian educational system can be divided into three major branches: elementary school, which provides instruction for children aged 6–10 years; primary school, for children aged 11–13 years; secondary school, which educates students 14–19 years old and offers a variety of programs ranging from college preparatory courses (classical and scientific high schools) to more comprehensive, vocationally oriented curricula (technical institutes, language and teacher training schools, etc.). The first and second branches are compulsory by law. Independently of the type of branch it is possible to attend public or private schools. In this study only students attending public schools were sampled. Besides, in Pavia students attend predominantly career training schools (about 65%).

It was decided to sample one school for each kind of public school and then select two classes from each of the five years of the course (first to fifth grade); all the students in the classes selected were required to participate in the research. Selection of the study sample was based on two considerations: (1) the sample needed to include a representation of students from all kinds and grades of high school, and (2) the procedure adopted had to be feasible for the purpose of conducting the study. In all, 7.5% of the 1346 students sampled were not available in their schools at the time of data collection because they were away on class fields trips (no attempt was made to recontact). Among responders, none refused to be a part of the survey but 56 did not declare their own sex or age and were thus eliminated from the data base. In the end, the total number of students included in the analysis was 1189: 438 males and 751 females.

The instrument. The data were collected during March and April of 1994 using a self-administered questionnaire consisting of 264 items. The students filled in the questionnaire in front of a trained interviewer (one per class) during school hours, without the teachers being present.

The questionnaire covers a wide range of topics regarding the students, including socio-demographic characteristics, evaluations of school and family life, relationships with peer groups, habits (i.e., smoking, drinking), academic performance, physical and psychological health status. In fact, many of the questions are items on psychometrics scales (e.g., General Health Questionnaire [GHQ] by Goldberg [14]; Eating Attitude Test [EAT] by Garner & Garfinkel [15]; Rome Depression Inventory [RDI] by Pancheri & Carilli [16]).

For the aims of the present work not all the variables contained in the questionnaire were utilized. The indicator employed for psychological distress (dependent variable) was the total score on 30-item GHQ scale (GHQ-30), a psychometric tool often used to evaluate psychological distress, depression and anxiety. Every item on the GHQ describes a symptom and has four possible replies: the two answers that indicate the absence of the symptom are given a score of '0', and the two that indicate the presence of the symptom receive a '1'. The overall score on the scale will thus fall into a range of 0–30, and it follows that the higher the total score, the greater the state of psychological distress. The GHQ was originally applied to adult populations and subsequently was used and validated for adolescents and young people as well [1, 17–20]. As far as the Italian situation is concerned, the following studies deserve to be mentioned: Fontanesi et al. [21], Bellantuono et al. [22], Lazzati et al. [23], Piccinelli & Politi [24]. The reliability of the entire questionnaire, which we carried out on a sample of 70 students from a secondary school in Pavia, was good: the Cohen concordance index (K) for the GHQ was found to be 0.52, indicating a reproducibility between fair and good [25].

The following (independent) variables were considered as correlates of psychological distress:

1. Sex: male (0) vs female (1).
2. Age: expressed as years old at the time of the interview: range 14–19.

Family variables:

3. Socio-economic status (SES): medium-high (0) vs low (1); determined on the basis of the parents' occupation and educational background as reported by the student.
4. Students' living situation: family with both parents (0) vs family with divorced or separated parents (1).
5. Parental immigration: both from Lombardy (0) vs at least one emigrated from another Italian region (1).
6. Love for parents: scale of values from 1–6. The higher the value on the scale, the greater the love for one's parents.
7. Parents' psycho-physical health: both parents in good psycho-physical health (0) vs at least one parent in poor psycho-physical health (1).
8. Type of high school attended: academic schools (0) vs vocational schools (1).
9. Problems with teachers: no (0) vs yes (1).
10. Problems with schoolfriends: no (0) vs yes (1).

Relational variables:

11. Acquaintances: becoming acquainted with new

people (0) vs not becoming acquainted with new people (1).
12. Friendship: has a good friend (0) vs does not have a good friend (1).
13. Home: does not spend the weekend at home (0) vs spends the weekend at home (1).
14. Sports: going in for sports outside the school setting (0) vs not going in for sports outside the school setting (1).
15. Physical health: no medical specialist examination or hospital admission (0) vs at least one medical specialist examination and/or one hospital admission (1).

Personal habits (in the last 12 months):

16. Use of psychoactive medicines: does not use psychoactive medicines (0) vs uses psychoactive medicines (1) (on the basis of a list of medicines and psychoactive medicines commercially available in Italy).
17. Illegal drug consumption: no drugs (0) vs at least occasional use of drugs (1).
18. Alcohol consumption: no alcohol (0) vs at least occasionally drinking one glass of wine or beer a day (1).
19. Smoking habits: non smoker (0) vs smoking at least occasionally (1).

Analytic strategy. We employed descriptive statistics to obtain a general image of the sample. Since the primary objective of the study was to examine the correlates of psychological distress in a sample of adolescent students, we used the GHQ total score as a continuous variable and searched for a possible association with each of the above mentioned independent variables by means of the Student's *t*-test or the F-test of variance analysis. Next, in order to evaluate the contribution to psychological distress made by each independent variable (while keeping all the other variables constant), a multiple regression analysis was carried out with the stepwise backward method (using SPSS/PC 5.0 for DOS) in which the total GHQ score was inserted as a dependent variable, while as independent variables only those found to be statistically significant at bivariate analysis ($p < 0.05$) were included. Furthermore, Bonferroni's correction had to be applied due to the large number of independent variables tested; the new threshold of significance was 0.005.

Results

The results may be classified in 4 different groups: (1) social and scholastic characteristics; (2) variables describing feelings about family life; (3) those regarding feelings about peer group life; and (4) those pertaining to life style habits and to general physical health.

Table 1 summarizes the distribution of the subjects according to the variables. The mean age is practically equal in the two sexes; 42.8% of those sampled come from a low social background, almost 11% live with one or no parent, 46.1% have parents who come from other regions of Italy and 9.3% describe the psycho-physical health of at least one of their parents as poor. In addition, 66.5% of the students attend vocational schools, 38.6% have problems with their teachers and 23.1% have troubles with schoolfriends.

Table 1. Prevalences (binary variables) and mean values (quantitive variables) of the variables investigated

		Males (n = 438) %	Females (n = 751) %	Total (n = 1189) %
Sex		36.8	63.2	100.0
Age	(means ± sd)	16.3 ± 1.5	16.4 ± 1.5	16.3 ± 1.5
Socio-economic status:	low	36.1	46.7	42.8
Students' living situation:	with one or no parents	9.8	11.2	10.7
Parental immigration:	one or both emigrated from other regions	46.6	45.8	46.1
Love for parents:	(means ± sd)	4.5 ± 0.9	4.6 ± 0.9	4.5 ± 0.9
Parents' psycho-physical health:	poor for at least one	7.6	10.3	9.3
High schools:	vocational schools	60.7	69.9	66.5
Problems with teachers:	yes	37.8	39.0	38.6
Problems with schoolfriends:	yes	19.8	25.0	23.1
Becoming acquainted with new people:	no	5.3	5.7	5.6
Have a good friend:	no	17.4	8.8	11.9
Weekend at home:	yes	7.6	11.9	10.3
Sports:	no	8.8	14.2	12.2
Physical health:	poor	30.4	34.3	32.8
Used psychoactive medicines:	yes	2.4	6.1	4.7
Illegal drug consumption:	yes	11.5	7.7	9.1
Alcohol consumption:	yes	62.0	43.5	50.3
Smokers:	yes	35.3	37.3	36.6

The majority of those interviewed meet people and have a good friend, participate in sports activities and spend the weekend in company. Some health problems are present in 32.8% of the subjects, and girls much more than boys use psychoactive medicines (6.1% vs 2.4%). As far as personal habits are concerned, the substance most often taken is alcohol, which about half of the sample population drinks; alcohol consumption, like illegal drug use, involves mainly males. Only the consumption of tobacco is about the same in the two sexes, with a slight excess in the girls.

Analyzing the level of symptoms of the GHQ, 9.5% of the females and 17.6% of the males report no symptoms, while 18% of the females and 27% of the males report only one symptom. The most frequent GHQ items experienced by the students are *feeling under strain* and *feeling nervous and hung up* among the girls, and *life is a struggle* above all for the boys.

Correlates of psychological distress. The statistical significance of the associations between the GHQ score and demographic variables, social and scholastic characteristics are reported in Table 2. The mean GHQ score is lower in the males (4.5 ± 4.7 points) than in the females (7.7 ± 6.7 points) and the statistical significance is quite high ($t = 9.4$, $p < 0.001$). The data reveal an association between psychological distress and increasing age in females ($F = 2.9$, $p < 0.05$), but not in males; the mean GHQ score for female students aged 14 years is 6.1 and increases to 8.4 at 19 years of age.

Psychological distress is associated with significatively higher scores in students living with one or no parents, with at least one parent who immigrated from a region different from that of residence (Lombardy), in those with low socio-economic status, and in those attending vocational schools. The adolescents who love their parents a lot and whose parents enjoy good physical and psychological health are less likely to report distress. The students who do not stay at home on the weekend, who participate actively in sports, and who feel comfortable meeting new people exhibit greater psychological well-being, while having a good friend does not show a significative relationship with GHQ.

The level of distress in relation to current physical health is statistically higher.

The students who smoke and use illegal drugs report higher levels of psychological distress, while those who drink do not display a statistically significant association with the GHQ score.

Main effects. Multiple regression analysis was applied in order to assess the main effects of key independent variables. Only those variables that proved to be significant at bivariate analysis (Table 2) were included in the multiple regression model; the final model that resulted from this contained 13 variables with statistical significance less than the exit p-value (POUT) of the model (0.1). However, in the end only 9 of these could be considered statistically significative because their p-value was less than 0.005 (the new threshold of statistical significance obtained by applying Bonferroni's correction).

The results of this analysis are reported in Table 3. Of the socio-demographic variables, only sex is associated with distress (female adolescents have higher GHQ values); the mean GHQ score increases by 2.5 points (coefficient B) going from the males to the females, all other conditions investigated remaining equal. Age was excluded from the final model. The students who attend vocational schools show a higher GHQ score than their academic counterparts, but this difference is not significant. Independently of the kind of school attended, the mean GHQ score rises by about 2 points going from the group of students who do not have problems with teachers or schoolfriends to those who do. As for family variables, SES and students' living situation were excluded from the final multiple regression model because their p-value exceeded the POUT threshold of significance, while little love for parents, poor parental psychological health and having immigrant parents are associated with distress. More precisely, there is an increase of 3.6 points in the mean GHQ score going from the adolescents who say their parents are in good psycho-physical health to those who say their parents are in very poor health. The mean GHQ score goes up a point from the group with both parents from Lombardy to the one with at least one parent coming from another region of Italy. The subjects who claim their love their parents very much have a lower mean GHQ score; in fact, this value decreases by 1.5 points as the score on the scale measuring love for one's parents increases.

As far as personal habits are concerned, only illegal drug use was not statistically significant (it was eliminated at the 5th step); for smoking the mean GHQ score rises by 1.2 points when going from non smokers to smokers, and it increases by 3.6 points when shifting from those who do not use psychoactive medicines to those who do. The presence of physical health disturbances does not elevate the GHQ score significantly ($p > 0.05$).

It is interesting to note the increase in the GHQ score that occurs in going from adolescents who say they spend the weekend at home to those who do not stay at home (1.9 points), and from those who claim they become acquainted with new people to ones who deny doing this (1.7 points); however, after applying Bonferroni's correction only staying at home retained statistical significance. The adolescents who say they do not engage in sports activities outside the school also have a higher mean GHQ score than those who say they do get involved outside school time (1.3 points), but this difference also loses

Table 2. Bivariate analysis (t test or F test) of GHQ-30 score and independent variables (* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$)

		GHQ (mean ± SD)	Test
Sex:	males	4.51 ± 4.75	$t = 9.4$***
	females	7.67 ± 6.74	
Age:	⩽ 14 years	5.52 ± 5.03	F = 2.8*
	15 years	5.94 ± 6.48	
	16 years	6.31 ± 5.78	
	17 years	7.55 ± 6.82	
	18 years	6.65 ± 6.47	
	⩾ 19 years	7.05 ± 6.65	
Socio-economic status:	middle-high	6.12 ± 6.06	$t = 2.3$*
	low	6.97 ± 6.49	
Students' living situation:	living with both parents	6.31 ± 6.16	$t = 3.0$**
	living with one or no parents	8.05 ± 6.82	
Parental immigration:	both from Lombardy	5.95 ± 6.05	t = 3.3***
	at least 1 emigrated from another Italian region	7.15 ± 6.46	
Love for parents:	none at all	12.29 ± 9.23	F = 27.0***
	very little	16.64 ± 6.11	
	a little	11.02 ± 7.04	
	a fair amount	7.36 ± 6.53	
	a lot	5.07 ± 5.33	
	very much	4.67 ± 4.85	
Parents' psycho-physical health:	good for both	6.08 ± 5.98	$t = 5.9$***
	poor for at least one	10.44 ± 7.49	
High schools:	academic schools	5.54 ± 5.76	$t = 3.9$***
	vocational schools	6.99 ± 6.46	
Problems with teachers:	no	5.22 ± 5.58	$t = 8.6$***
	yes	8.47 ± 6.69	
Problems with schoolfriends:	no	5.75 ± 5.91	$t = 7.1$***
	yes	9.00 ± 6.77	
Becoming acquainted with new people:	yes	6.40 ± 6.20	$t = 2.3$*
	no	8.20 ± 7.09	
Have a good friend:	yes	6.46 ± 6.23	$t = 0.9$
	no	6.98 ± 6.69	
Weekend at home:	no	6.27 ± 6.17	$t = 3.7$***
	yes	8.48 ± 6.79	
Going in for sports:	yes	6.22 ± 6.04	$t = 3.2$**
	no	8.84 ± 7.55	
Physical health:	not seen by doctor and not hospitalized	5.96 ± 6.02	$t = 4.1$***
	seen by doctor or hospitalized	7.59 ± 6.60	
Used psychoactive medicines:	no	6.26 ± 6.03	$t = 5.1$***
	yes	11.98 ± 8.25	
Illegal drug consumption:	no	6.22 ± 6.04	$t = 3.5$***
	yes	8.84 ± 7.55	
Alcohol consumption:	no	6.23 ± 6.24	$t = 1.4$
	yes	6.74 ± 6.28	
Smokers:	no	5.69 ± 5.74	$t = 5.6$***
	yes	7.88 ± 6.85	

statistical significance when Bonferroni's correction is applied.

Lastly, about 28% of the variance is explained by the variables that remained in the final model.

Discussion

Our study revealed an association between psychological distress and some of the personal, family,

Table 3. Regression coefficients of the GHQ index on independent variables (n = 1041[a])

Variables included in the final model		B	SE (B)	β	*p*
Sex	(male vs female)	2.5106	0.3531	0.1922	0.0001
School (academic schools vs vocational schools)		**0.8093**	**0.3607**	**0.0607**	**0.0251**
Problems with schoolfriends	(no vs yes)	2.1841	0.4093	0.1472	0.0001
Problems with teachers	(no vs yes)	1.8218	0.3645	0.1415	0.0001
Parental immigration (both Lombard vs at least 1 not Lombard)		0.9825	0.3339	0.0782	0.0033
Love for parents	(scale from 0 to 6)	−1.5953	0.2050	−0.2171	0.0001
Parents' psycho-physical health	(good vs poor)	1.9692	0.5875	0.0919	0.0008
Physical health (not seen and not hospitalized as yes)		**0.7039**	**0.3636**	**0.0525**	**0.0532**
Psychoactive medicines	(no vs yes)	3.5700	0.8045	0.1208	0.0001
Smoking	(no vs yes)	1.2459	0.3641	0.0956	0.0006
Going in for sports	(yes vs no)	**1.2933**	**0.5176**	**0.0672**	**0.0126**
Home	(no vs yes)	1.9300	0.5677	0.0928	0.0007
Becoming acquainted with new people (yes vs no)		**1.7003**	**0.7288**	**0.0628**	**0.0198**
Constant		8.5298	1.0713		
$R^2 = 0.28$					
Variables not included in the final equation model					
Age					
Socio-economic status (medium-high vs low)					
Students' living situation (living with both parents vs living with one or no parents)					
Illegal drug consumption (no vs yes)					

[a] The observations using multiple regression analysis involve only those with no missing values for any of the variables analyzed.

relational and scholastic variables investigated, with the results often in agreement with literature data. Psychological distress seems to be greater in females than in males, as was emphasized by multivariate analysis, which confirmed what had emerged from bivariate analysis. Our sample seems to support what has become a recognized tendency in other countries, namely that there is a greater prevalence of psychological distress among females as early as adolescence [1, 3, 4, 26], and that this excess carries over into adulthood [21, 27]. Some of the gender differences may be accounted for genetically, but it is essential to avoid explanations that merely restate in biological terms the fact that there are differences between men and women. A tentative explanation for this finding is offered in the literature by the work of Tousignant et al. [28]: starting from the hypothesis that the greater prevalence of psychological distress in females is due to the fact that women articulate depressive symptoms, even very minor ones, more easily then men, the authors conclude that the excess could actually be due to this fact as much as to a true expression of greater distress.

Age does not seem to play an important role in our sample since it was the first variable to be eliminated from the multivariate model.

Living with only one parent is not associated with psychological distress because the corresponding variable does not remain in the model. Not having parents who emigrated from a region other than that of residence, perception that parental health is good and the degree of love felt for one's parents seem to be important for the psychological well-being of adolescents. These findings are consistent with previous research in which it was pointed out that a harmonious family life seems to be more important for the psychological well-being of adolescents than the presence of both parents in the home [8, 26, 29]. As reported in the literature, the socio-economic background of the adolescents under investigation does not show any strong effect on their distress level, a fact that agrees with a study by D'Arcy and Siddique [1], who attributed this lack of association to a greater socio-economic similarity among high schools students (selection bias).

An interesting argument can be made to explain the results involving the relational variables; the picture that emerges from the regression analysis depicts teenages who spend the weekend at home as being more psychologically distressed than their counterparts who lead a suitably active relational life. This finding is in perfect agreement with the results of other investigations [1, 3, 9].

The results regarding the relationship between personal habits and psychological distress do not completely agree with a study published by Deykin et al. [30], who show a close association between drug abuse, alcohol consumption and psychological disturbances, especially those of a depressive nature.

As far as the school is concerned, it is difficult to explain why the GHQ score increases when going from academic high school students to those

attending technical and professional schools, since the former schools are considered to be more difficult and more demanding, requiring the students to continue their courses at the university level. In any case, after Bonferroni's correction this variable no longer retains statistical significance ($p > 0.005$).

Conclusion

This study has two limitations: only the point of view of the adolescents is presented and external variables are lacking; only adolescents attending school were sampled. Furthermore, being a cross-sectional and not a prospective study, the results of this survey must be seen only as associations that could be investigated subsequently in longitudinal studies as possible risk factors for psychological distress in the Italian context.

Nevertheless, the important roles of family ties and of social relationships represent fundamental points on which, in our opinion, future interventions on behalf of the adolescents living in our area should be based, stimulating programs that facilitate social gatherings for adolescents and those that offer support to families.

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