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DISTRESS IN PREADOLESCENCE: EMERGENT PSYCHOPATHOLOGICAL ELEMENTS AND SOCIO-DEMOGRAPHIC CHARACTERISTICS IN MIDDLE SCHOOL STUDENTS

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Abstract
Psychological distress in preadolescents refers to a variety of symptoms that includes either internalized symptoms (depression, anxiety, panic), either externalized manifestations (eating disorders, substance abuse). In the recent years epidemiological studies revealed a growing tendency of children referral to treatment due to psychopathological conditions. The aim of this study was to screen a young population of student (middle schoolers) for different types of symptoms that could be described by psychological distress. The results revealed that anxiety symptoms tend to grow from the 5th grade to the 7th grade and then decrease in the 8th grade. Also, emotional-eating students tend to experience higher levels of anxiety compared to others. Implications for future research and functional mechanisms are discussed.

Keywords: psychological distress; preadolescents; anxiety-related symptoms; emotional-eating; screening.

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Over the past decades, there have been registered more cases of children and adolescents who were referred to psychiatric services for different complaints, starting from mood disorders or anxiety to substance abuse and eating disorders. The literature usually brings up the concept of psychological distress when referring to a variety of symptoms that usually ranges from depression and anxiety to all kinds of behavioral problems (Drapeau et al., 2012).

Depression

Due to a lack of suitable diagnostic criteria for depression in children and adolescents, information referring to the prevalence are limited. Some studies indicate that depressive episodes occur in a relatively low proportion of preschool children, affecting roughly 1 to 2.5% of this group, with no notable gender differences. In contrast, estimates of unipolar depression prevalence up to the end of adolescence are similar to those reported in the adult population, with 4 to 9% of individuals experiencing a depressive episode in a 12-month period (Costello et al., 2005; Goldman, 2012).

The rise in the female/male ratio of adolescents presenting with depressive symptoms after puberty was highlighted in the literature. This disparity is considered to be influenced by hormonal alterations, which play a role in this phenomenon, functioning more to raise susceptibility to external stresses than to cause depressive signs and symptoms per se (Rocha et al., 2013).

For children and adolescents who receive proper treatment and follow a check-up therapy program, the duration of a depressive episode is considered to last approximately 8 months. Although most of the patients recover from their first episode, statistics indicate that the chances of recurrence range from 20 to 60% in the first two years following remission, rising to 70% after five years (Costello et al., 2002).

Alcohol use in children and adolescents

Alcohol is widely accessible in many countries, and it is one of the most used drugs within adolescents. One important problem regarding its use is that excessive alcohol drinking happens at a very young age, and this leads to brain damage and alterations in brain development (Grant et al., 2004).

Alcohol is used by roughly 1% of children aged 12 and under, but there is a significant rise during adolescence, reaching around 45.5% (Adams et al., 2014).

The lifetime prevalence of alcohol misuse and dependence is estimated to be about 18% and 5%, respectively. Taken in consideration other studies, it can be concluded that adolescents and young adults are reaching adult levels of alcohol use disorders (Skala & Walter, 2013).

Risk factors for alcohol consumption

A positive family history of alcoholism and developing concomitant mental illnesses are among the recognized variables predisposing to the development of alcohol use disorders in adolescents.

Early-life stress and traumatic experiences have also been linked to teenage problem drinking and alcohol dependency in adulthood, however moderating variables such as the combination of genetic variation and environmental stressors must be taken in consideration (Enoch, 2012).

The relationship the adolescents have with the parents can predict a possible alcohol use disorder: for example, a bad relationship with the father during childhood and adolescence has been proven to be predictive of alcohol issues in early adulthood (Kramer et al., 2008). Also, other factors regarding the family can have an influence: higher mother education was found to be protective of alcohol-related disorders, particularly among boys, whereas higher household income was linked with a higher risk of alcohol consumption and problem use, most notably among girls (Melotti et al., 2013).

Evolution

Teenagers who begin drinking before the age of 15 can be diagnosed with alcohol dependency at some point in their life. The incidence of this condition lower with increasing age at commencement of usage. Preadolescence and early adolescence (ages 16 and younger) can have a particularly sensitive time for the onset of drinking (Grant & Dawson, 1997).

In some cases, adolescents do consume alcohol and even occasional abuse can be a pattern that does not predispose for further problems.

Binge drinking

This topic or risky single occasion drinking has caught the interest of researchers in recent decades, especially in Europe. The classic definition is a period of excessive drinking that lasts several days. A more contemporary meaning is the consumption of huge amounts of alcohol on a single occasion, which can be defined as resulting in high blood alcohol concentrations with possible deleterious consequences (Skala & Walter, 2013).

Binge drinking of alcohol is recognized as the most common kind of alcohol abuse in adolescents and young adults. It normally appears between the ages of 13 and 15 years, peaks in the late teens and early twenties, and then gradually declines. Men and high-income nations have greater prevalence rates. Binge drinking with 11 units of alcohol or more appears to be widespread in 13–17-year-old boys and significantly fewer in girls (Skala & Walter, 2013).

Eating disorders in children and adolescents

Eating disorders in children and adolescents come under clinical attention, because they can determine not only physical, but also serious psychological consequences.

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) mentioned the following eating disorders as most common: Anorexia nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED) and Avoidant/restrictive food intake disorder (ARFID). Other eating disorders which must be taken into consideration are Pica and Rumination disorder.

Etymologically, AN refers to the condition of losing the appetite in the absence of a somatic cause. The central psychological mechanism that explains AN is the distorted perception of the body and the tendency to overestimate the body`s weight with disregard for empirical evidence of the contrary. Compared to AN patients, people with BN usually maintain an optimal body weight, even though they too struggle with physical discomfort (Faur, 2022a).

Eating disorders are one of the most prevalent psychiatric disorders in adolescence and it depends mostly on gender, as recent studies suggest a range from 1.0 to 22.7 for girls and 0.3 to 0.6 for boys. The average onset age of these disorders is 12.5 years and the most common eating disorder seen in adolescence is considered to be Binge Eating Disorder (BED). For long periods of time, eating disorders were considered female gender bound disorders, but starting with DSM V and the changes made for the diagnostic criteria, as well as for the introduction of avoidant/restrictive food intake disorder (ARFID) considered this disorder to be a serious health problem for males also (Hornberger et al., 2021; Riva et al., 2023).

The prevalence of BN is 1.5% in women and 0.5% in males and for AN the onset is supposed to be during adolescence, comparing to BN, which can be diagnosed in late adolescence (Dawson, 2018). In other terms, recent studies concluded that the general age of onset for most eating disorders is considered to be 12 years old, comparing to previous data which took in consideration mid to late adolescence as a typical age of onset for these disorders (Lantzouni & Grady, 2021).

Eating disorders are common in all racial and ethnic groups, as well as in lower socio-economical classes, preadolescent children, boys, children, and adolescents regarded to have an average or increased body size (Hornberger et al., 2021).

Eating disorders have one of the highest risks for mortality comparing to other mental health problems in children and adolescents. Over half of females in adolescence and almost one-third of adolescent boys follow harmful weight-control practices such as skipping meals, strict fasting programs, smoking, vomiting, and using laxatives. 42% of third

graders desire to be slimmer, whereas 81% of 10-year-old females are terrified of growing obese (Dawson, 2018).

Recent epidemiological statistics point a rise of eating disorders in children and teenagers as demonstrated by the data found in most reviews and scientific articles: from 3.5% for the 2000-2006 to 7.8% for 2013-2018 (Frieiro et al., 2022).

Avoidant/restrictive food intake disorder (ARFID) remains mostly undiagnosed because many clinical practicians do not take it into consideration as strictly as they would do for the other disorders. This can be also a consequence of the fact that ARFID can be a challenge in terms of diagnosis, as patients present with a wide variety of physical signs and symptoms (Sanchez-Cerezo et al., 2023).

The neurobiology of eating disorders

Studies that included PET-CT imaging revealed increased serotonin 1A-receptor binding in AN and BN throughout illness and recovery, indicating state-independent changes. On the other hand, the serotonin 2A-receptor was normal in ill AN patient, but decreased following the recovery process, indicating dynamic adjustments. BN did not vary in dopamine D2-receptor, while decreased striatal dopamine release was related with increased binge eating frequency.

As for the anatomical features, there can be detected changes in cortical volumes for AN, depending on its severity. Binge eating or purging frequency may lead to a reduced cortical volume or thickness. Also, based on imaging studies of the white matter volume, it was concluded that the longer the course of the disease is, the more extensive lesions will occur, but these may improve during the recovery period (Frank et al., 2019).

Assessment and screening procedures

Usually, the screening process starts with pediatricians, who have a major role in detecting these disorders and develop specific strategies for a complete evaluation and medical therapy. Also, parents should take in consideration that eating disorders can be seen in children who are overweight or obese (Dawson, 2018).

An important aspect that clinicians should consider is to have an individual interview with the parents or caregivers, because in some cases children and adolescents might not mention some aspects or would not answer specific questions. An interview in the presence of the parents would not necessary be helpful, as it might add a supplementary distress to the clinical evaluation, which can already be uncomfortable for children (Lantzouni & Grady, 2021).

The first signs that physicians should take into consideration are any diet/ eating changes, weight fluctuations, disappointment in body image, experiences of weight-based stigma, any new exercise patterns (Hornberger et al., 2021). Another important point of view is that screenings should be

also performed for children and adolescents who do not follow the criteria for weight loss or appear to be at a proper weight. This statement can be strongly sustained by the fact that binge eating episodes can be more often reported in children and adolescents who are overweight (DerMarderosian et al., 2018; Hayes et al., 2018).

A psychosocial assessment includes home and educational activities, drugs/diet, sexuality, mental health problems (suicidality/depression, anxiety). From the medical point of view, the measurements should include growth parameters and vital signs, weight, height, and BMI, which can be evaluated by using specific growth charts (Hornberger et al., 2021).

It is recommended (when possible) for the evaluation of these children and adolescents to include also collateral history and information from other persons close to the patients (teachers, relatives), because they might have an impaired perception of health, of their body image and food and these changes are not always visible to the family, especially if unhealthy eating habits are developed inside of the family dynamic (DerMarderosian et al., 2018).

Complications and risk factors

Eating disorders can lead to serious medical problems, such as dermatological, gastro-intestinal, renal, endocrinal, cardio-vascular, psychological, and neurological complications. As for the psychological effects, they include mostly symptoms that can be related to depression, anxiety, emotional dysregulation and deficits in executive functioning (Hornberger et al., 2021). Also, taking in consideration a comparison between girls and boys, recent studies suggested that psychiatric comorbidity of eating disorders in males are mostly related to those affected by binge-eating disorder and bulimia nervosa and they can develop psychiatric comorbidities such as anxiety, psychotic disorders, narcissistic and antisocial personality disorders, impulse control problems, obsessive-compulsive, drugs, and alcohol abuse (Riva et al., 2023).

Comparing to adults, adolescents have higher rates for recovery. There are few data regarding the exact full process of recovery for specific eating disorders, but in BN, BED and purging disorder there were registered higher rates of relapse and comorbidities development. Also, a poor outcome is associated with alcohol and drugs usage. An important mental health problem which must be taken in consideration for these patients is the suicide risk, as suicide rates are increased among patients with eating disorders (Hornberger et al., 2021).

Self-esteem can be considered a marker for a healthy lifestyle. The connection between self-perception and self-esteem, and the correlation to eating behavior is thought to be essential, particularly among women. Self-esteem may be connected with building one's body image during adolescence, as well as being a factor for eating disorders. A poor self-

esteem coexists with eating disorders because the symptoms of these illnesses increase poor self-esteem, producing a cycle of maintenance (Frieiro et al., 2022).

Regarding social networks and peer group pressure, the correlation between the use of social networks and the development of eating disorders in children and adolescents draw the attention of mental health specialists, as they have identified problematic behaviors, such as excessive use of social networks or sharing pictures that encourage abnormal eating attitudes and behaviors. This hypothesis started from the theory of objectification and the implications of being a woman in a culture that draw strict requests of the female body so it can fit to the generalized acceptable standard. According to the social network media exposure, pressures to lose weight through the content of diet-culture and thinness promotion are very common, as is the exposure to advertising and promotion of light foods, all of which can precipitate risk factors such as body dissatisfaction or bulimic behavior. Also, another important factor which should not be overlooked is that social network has a defining role on people's self-esteem and life satisfaction (Frieiro et al., 2022). With respect to peer group pressure, generally, the perceived acceptance or rejection from the preadolescent either lowers or increases the risk for any behavioral disorder (Faur, 2022b).

Environmental factors can be considered an individual risk factor. In this case, there can be included an easy access to cheap and high calorie types of food or sedentary activities (mostly activities which involve long times being seated) (Hayes et al., 2018).

Lastly, a common risk factor brought up in the literature is gender: the onset and the evolution of eating disorders can be different for male and female gender. Girls who also have other psychiatric comorbidities such as mood/ anxiety disorder or premorbid perfectionistic personality traits are at a higher risk to develop an eating disorder. Boys can be more concerned about their body imagine and this can lead to behavioral changes in order to improve muscularity (Tan et al., 2022).

Method

Objectives

The main objective of this study was to screen the preadolescent population for 8 different symptom clusters: depression, trauma, bulimia, obsessions and compulsions, panic, agoraphobia, social anxiety, and generalized anxiety.

With respect to the symptom-related data, we wanted to investigate whether these self-reported symptoms manifest differently across the

different grades of middle school or not while accounting at the same time for a possible explanatory tendency of manifestation.

Among the categorical variables that we included in this study, we emphasized the role of alcohol exposure (the students reported whether they drank alcohol at least once in their lifetime) and binge eating mechanisms.

Participants

The total sample had 185 participants which were middle school students from a public school in Oradea, Romania. The grade distribution of the sample was the following: 66 (35.5%) were in the 5th grade, 21 (11.3%) were in the 6th grade, 23 (12.4%) were in the 7th grade while the remaining 75 (40.3%) were in the 8th grade.

Of the total sample, 95 (51.1%) were females. The mean age of the participants was 13 years (min = 10, max = 15). With respect to the living area, the vast majority of the participants came from the urban area (N = 149, 80.1%).

61 (32.8%) participants reported drinking alcohol at least once in their lifetime and 79 (42.5%) reported at least one episode of emotional eating (binge eating).

Measures

Self-reported symptoms. In order to measure the psychological distress self-reported symptoms, we used the Psychiatric Diagnostic Screening Questionnaire (PDSQ). It contains 125 items and measures 13 different psychopathological conditions. In order to make it appropriate for screening the preadolescent population, we decided to measure only 8 of these symptom clusters, which we already mentioned in the objectives section.

The psychometric proprieties of the original instrument were examined in a series of four studies. With regard to the inter-item correlation, the scale proved to deliver reliable results because of the satisfactory index varying from $\alpha = .66$ to $\alpha = .94$ (Zimmerman & Mattia, 2001).

PDSQ was adapted for Romanian population in 2011. The adapted instrument revealed a good inter-item correlation, with Cronbach's alpha ranging from .68 (Somatization Disorder subscale) to .94 (Posttraumatic Stress Disorder subscale). The reliability of the instrument was further demonstrated by the high test-retest correlation (ranging between .67 for Bulimia subscale and .93 for Drug Abuse subscale). Regarding the reliability indices of the subscales that were used for the purposes of this study, the inter-item correlation indices proved to be satisfactory with values ranging from $\alpha = .84$ to .94 (Ciuca et al., 2011).

Procedure

After the approval from the board of directors was received (nr. 4625/06.11.2023), we proceeded in collecting the data. The instruments were distributed to the students in the paper-pencil format.

Once the data collection was completed, we ran the statistical analysis and for these purposes we used SPSS v. 23.0. Here we verified the demographic characteristics of our sample and tested the objectives mentioned above.

Results and discussions

Class differences

Regarding the description of our sample's results, the means with their standard deviations can be consulted in table 1 and 2 for the 5th grade students and the 8th grade students.

Table 1. Means and standard deviations for self-reported symptoms in the 8th grade

Symptom screening	**Depression**	**Trauma**	**Bulimia**	**Obsessions and compulsions**
N	75	75	72	72
Mean	6.66	3.18	2.68	1.93
S.D.	4.54	3.48	2.60	2.12
Symptom screening	**Panic**	**Agoraphobia**	**Social Anxiety**	**Anxiety**
N	71	23	23	23
Mean	1.87	2.73	6.26	2.91
S.D.	2.42	2.11	4.19	3.04

Table 2. Means and standard deviations for self-reported symptoms in the 5th grade

Symptom screening	**Depression**	**Trauma**	**Bulimia**	**Obsessions and compulsions**
N	66	66	65	64
Mean	5.19	3.43	2.00	1.26
S.D.	4.51	3.72	2.22	1.64
Symptom screening	**Panic**	**Agoraphobia**	**Social Anxiety**	**Anxiety**
N	64	54	54	53
Mean	1.42	1.96	3.40	2.09
S.D.	2.15	2.51	3.82	2.74

Demographic characteristics reveal a growing tendency from the 5th grade to the 7th grade, with a major downfall in the 8th grade (especially in the case of anxiety-related symptoms: generalized anxiety, social anxiety,

panic and agoraphobia). The figures 1-4 present the mean scores of the anxiety-related self-reported symptoms from the 5th grade to the 8th grade.

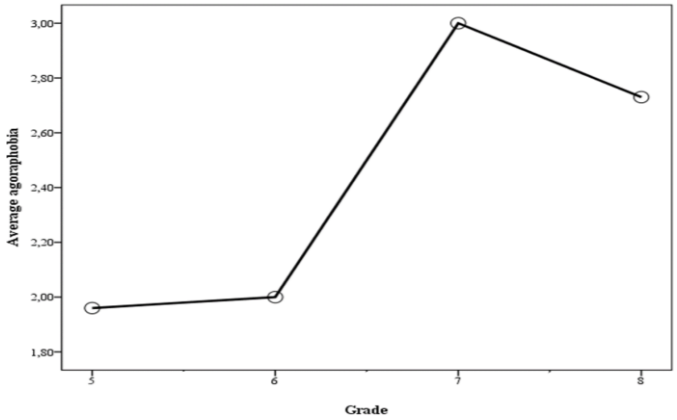

Figure 1. Average scores for agoraphobia related to grade

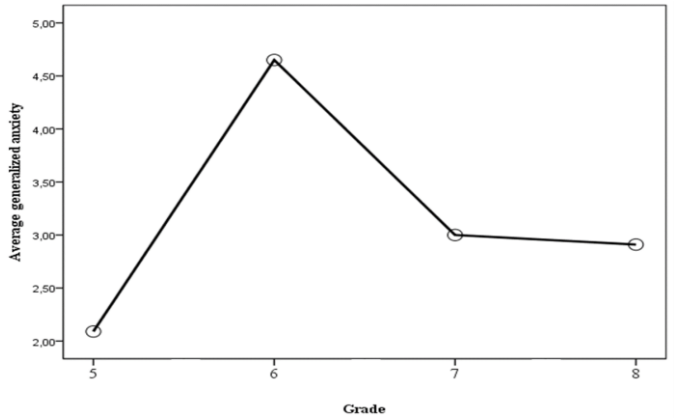

Figure 2. Average scores for generalized anxiety related to grade

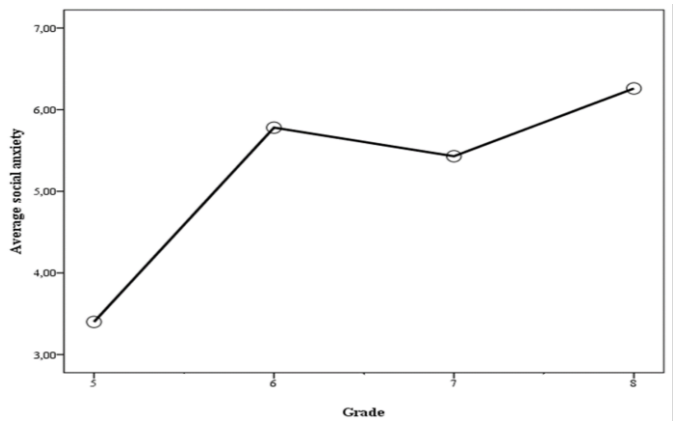

Figure 3. Average scores for social anxiety related to grade

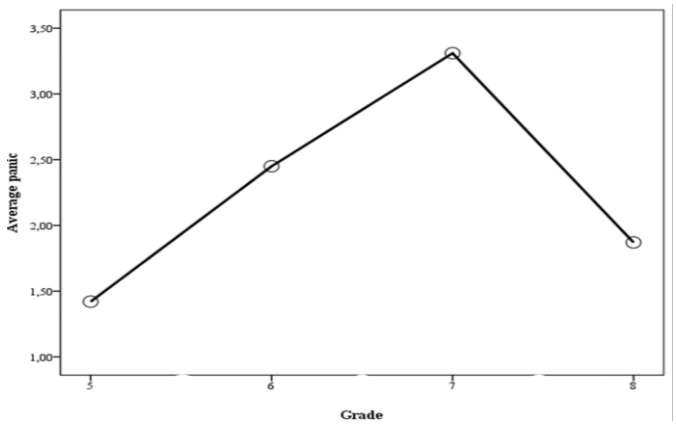

Figure 4. Average scores for panic related to grade

In order to see if there are significant differences across the groups, we ran one multivariate analysis of variance (MANOVA) that revealed an $F(24, 315) = 1.80$, $p < .05$. Thus, the combined self-reported symptoms differ based on the grade the students were in. After assuming the homogeneity of variances by inspecting the Levene's test, we continued by inspecting the univariate *F* tests for the four different grades across the self-reported symptoms. The only significant results were seen with respect to obsessive-compulsive symptoms, $F(3, 110) = 5.59$, $p < .001$, panic, $F(3, 110) = 3.11$, $p < .05$, social anxiety, $F(3, 110) = 3.14$, $p < .05$, and generalized anxiety, $F(3, 110)$, $p < .05$.

The LSD post-hoc test inspection revealed that, for obsessive-compulsive symptoms, there were significant differences between the 5th grade and 7th grade ($M_5 = 1.26$, $M_7 = 3.21$, $p < .001$), and between the 6th grade and the 7th grade ($M_6 = 1.90$, $M_7 = 3.21$, $p < .05$). For the panic symptoms, significant differences were found between the 5th grade and 7th grade ($M_5 = 1.42$, $M_7 = 3.31$, $p < .05$); regarding the social anxiety symptoms, significant differences were found between the 5th grade and 6th grade ($M_5 = 3.40$, $M_6 = 5.78$, $p < .05$), and between the 5th grade and 8th grade ($M_5 = 3.40$, $M_8 = 1.87$, $p < .05$). Generalized anxiety was also significantly different between 5th grade and 7th grade ($M_5 = 2.09$, $M_7 = 4.65$, $p < .05$).

Difference in anxiety-related symptoms and alcohol use

After inspecting the differences in the self-reported symptoms regarding the student's grade, we ran another MANOVA to test the possible difference between anxiety-related symptoms in the group that reported alcohol use at least once, and the group that was not exposed to alcohol. The test revealed an $F(4, 109) = 2.65$, $p < .05$, but no significant differences in the univariate analysis. While generalized anxiety and obsessive-compulsive self-reported symptoms were at a higher level in the subjects who reported

drinking alcohol at least once (generalized anxiety: $M = 3.37 > M = 2.58$; obsessive-compulsive: $M = 2.05 > M = 1.77$), the reversed phenomenon was observed regarding panic and social anxiety.

Difference in anxiety-related symptoms with and emotional eating

Finally, we also wanted to examine if there are differences in anxiety-related symptoms between the students who reported emotional eating and students without this stress-relief mechanism. The MANOVA test revealed an $F(4, 109) = 4.46$, $p < .05$. The univariate analysis revealed significant differences across all four included symptoms, of which social anxiety presented the highest mean difference, $F(1, 112) = 11.86$, $p < .001$, $M_{comp} = 6.46$, $M_{non\text{-}comp} = 3.72$, leading to the conclusion that emotional (binge) eating students report higher levels of anxiety-related symptoms compared to the non-binge eating students.

Conclusions and limitations

As previous studies have pointed out, anxiety-related symptoms tend to develop in the early adolescence and maintain a relatively steady course until young adulthood where they can potentially develop into full diagnoses (Costello et al., 2003).

The present study confirmed this tendency, especially with respect to the transition from the 5^{th} grade to the next ones. However, regarding generalized anxiety and panic self-reported symptoms, the levels drop around the 8th grade, which can be explained by the fact that, for our sample, the end of middle school period came with the acquisition of functional mechanisms that helped the students to accurately predict their environment, thus being able to control more of the threat-like stimuli that usually define anxiety-related symptoms.

In the same way, our findings support previous works that emphasized the correlated tendencies between anxiety, stress and binge eating during adolescence. Regarding the fact that emotional-eating students tend to experience higher levels of anxiety, it was argued that psychological distress reduces cognitive restraints that are involved in processing the thoughts and actions related to eating behaviors, thus resulting binge-eating episodes (Lim et al., 2021).

Lastly, the fact that anxiety symptom differences related to alcohol use revealed inconclusive results (higher levels in generalized anxiety and obsessive-compulsive self-reported symptoms, but lower levels regarding panic and social anxiety), none of the students involved in the study was confronting with clinical issues regarding alcohol use. Thus, for our sample,

a mere use of alcohol from time to time doesn't seem to be enough to explain potential differences across anxiety-related symptoms.

Our study had several limitations. One of them involved missing data and significant differences in participants across different grade (for example, N = 75 were in the 8th grade, but only N = 23 in the 7th grade). These differences might have influenced the results and increase the probability of a type-II error. Another limitation involved methodological aspects regarding the adaptation of an instrument that was made to screen population of at least 18 years to a preadolescent population.

The findings in the current study stress the importance of screening procedures as the first step in the prevention approach in the young population. Future directions should emphasize more the role of socio-demographic characteristics in the onset of these symptoms in the preadolescent context and investigate this with larger samples.

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