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Text Anxiety in Adolescents: The Role of Self-Criticism and Acceptance and Mindfulness Skills
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The current study sets out to explore test anxiety in adolescent students. The effect of sociodemographic variables on test anxiety was controlled for and the relationship between test anxiety and other psychological constructs, such as self-criticism, social anxiety, acceptance and mindfulness, was examined. In addition, the predictive effect/power of these variables was analyzed and a comparative study between high and low test anxiety adolescents was conducted. Participants in this study were 449 high school students, 211 boys and 238 girls, with a mean age of 16.28 years. These participants completed a battery of self-report questionnaires composed by the Portuguese versions of Test Anxiety Inventory (TAI), Child Acceptance and Mindfulness Measure (CAMM), Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS), and the Social Anxiety and Avoidance Scale for Adolescents (SAASA). Results showed that gender, self-criticism and competencies for acceptance and mindfulness had a significant and an independent contribution on the prediction of test anxiety. The comparative study revealed that adolescents with high test anxiety score significantly higher in negative forms of self-criticism, social anxiety and lower in self-reassurance, acceptance and mindfulness, when compared to those with low test anxiety. Despite its exploratory nature, the current study adds to the existing knowledge on the influence of psychological processes, such as self-criticism and acceptance, on test anxiety. These findings might constitute a relevant contribution to psychological intervention with adolescents.

Keywords: test anxiety, adolescence, self-criticism, acceptance and mindfulness.

Este estudio se propone explorar la ansiedad ante los exámenes en adolescentes. El efecto de las variables sociodemográficas fue controlado y se examinó la relación entre esta forma de ansiedad y la autocritica, la ansiedad social, la aceptación y la conciencia plena. Además, se analizó el poder predictivo de estas variables y se realizó un estudio comparativo entre adolescentes con ansiedad ante los exámenes alta y baja. Participaron 449 alumnos de Educación Secundaria, 211 varones y 238 mujeres, con una edad media de 16.28 años. Los instrumentos de medida utilizados han sido: Test Anxiety Inventory (TAI), Child Acceptance and Mindfulness Measure (CAMM), Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS) y la Escala de Ansiedad y Evitación de Situaciones Sociales para Adolescentes (EAESSA). Los resultados mostraron que el género, la autocritica y las competencias para la aceptación y atención plena tuvieron un efecto significativo y una contribución independiente sobre la predicción de la ansiedad ante los exámenes. El estudio comparativo reveló que los adolescentes con alta ansiedad ante los exámenes puntuaban significativamente más alto en las formas negativas de autocritica y de ansiedad social, y muestran niveles más bajos de autoconfianza, aceptación y conciencia plena, comparados con aquellos adolescentes con bajos niveles de ansiedad ante los exámenes. A pesar de su naturaleza exploratoria, este estudio completa los conocimientos existentes sobre la influencia de procesos psicológicos, como la autocritica y la aceptación, en la ansiedad ante los exámenes. Estos hallazgos podrían así constituir una contribución relevante para la intervención psicológica con adolescentes.

Palabras clave: ansiedad ante los exámenes, adolescencia, autocritica, aceptación, conciencia plena.
In Portugal, in university teaching context, exam anxiety appears as one of the problems that motivate a larger number of students to ask for support in psycho-pedagogic counseling facilities (Pereira, Masson, Ataíde, & Melo, 2004; Melo, Pinto-Gouveia, & Pereira, 2006). Despite the absence of empiric studies on high school teenagers, it is consensual that the perception of this phenomenon is very frequent. It is in this school stage that students decide the application to university, and school grade competition assumes a major role, generating greater anxiety. Hence, we have deliberately chosen high school adolescent population as the object of this study.

Nowadays, scientific literature widely accepts anxiety as inherent to human condition, and as an adaptation tool, a response to real or symbolic danger. Exam anxiety related to anxiety in school or academic evaluation situations is a further example of the alarm process involved in anticipation or confrontation with a situation one perceives as “dangerous”, as very difficult and exceeding one’s skills or resources to deal with it (Beck, Emery, & Greenberg, 1985; Zeidner, 1998). Evaluation anxiety, present in all individuals, in a smaller or larger scale, may have an adaptation function if it helps to concentrate resources and abilities to produce more and better in an effective manner, or, on the contrary, it may assume a non-adaptive function, if it decreases efficacy and/or prevents the completion of tasks and challenges desired by the subject (or necessary to the achievement of goals). According to theoreticians of evaluation anxiety, its main manifestations involve concerns related to a possible negative performance and respective consequences (referring to evaluation others might do about the self, and or to consequences for the future) and high levels of emotionality (expressed by an increased physiologic activation) (Liebert & Morris, 1967).

In a theoretical point of view, two definitive contributions have emerged from the wide range of studies undertaken between the 60s and the 80s. On the one hand, Spielberger and Vagg (1995) developed the distinction operated by Cattell and Scheier between trace anxiety and state anxiety. State anxiety would be transitory, occurring in occasional situations, such as a particularly difficult exam, or for which the student was not properly prepared; while trace anxiety would constitute a psychological predisposition to react with a certain level of anxiety (high or low) to an indiscriminate number of situations of evaluation or threat.

On the other hand, Liebert and Morris (1967), in an innovative study, decomposed exams’ anxiety in two fundamental factors: cognitive (worry) and affective (emotionality). Since then, the multidimensional conception of exams’ anxiety (Zeidner, 1998) assumed an important heuristic value in studies guidelines (Sarason, 1984, 1986, 1988). In fact, the bi-dimensional structure identified by Liebert and Morris (1967) was adopted by Spielberger in Test Anxiety Inventory (Spielberger, et al., 1980). Later investigations (e.g., Deffenbacher & Hazaleus, 1985) indicate that the cognitive component (namely, worry) exerts a preponderant action in the deterioration of academic performance.

In general, anxious students are extremely vulnerable to contextual signs of evaluation situations; before, during and after tests/exams, the student feels insecure, worried and doubtful (Zeidner, 1998). Intrusive thoughts (e.g., anticipation of failure) interfere with the attention processes required by the task and, consequently, jeopardize performance (Sarason, 1984, 1988). As a matter of fact, studies conducted in this area of research have shown the negative effect that excessive anxiety has in performance situations, mostly on the academic level (Cruz, 1989; McDonald, 2001; Prins & Hanewalds, 1997; Seipp, 1991) when, in most cases, individuals possess the necessary knowledge to effectively perform the tasks.

On a clinical perspective, anxiety towards tests, being primarily a preoccupation with a negative evaluation, can be framed within the diagnosis of Social Anxiety Disorder, as it is described by DSM (American Psychiatric Association, 2002). Worrying about the scrutiny of others is a central aspect of social anxiety disorder, whether it is centered in school assessments, whether it is generalized to other social situations of interaction and performance (Cunha, Pinto-Gouveia, & Soares, 2007), causing a meaningful negative impact in the several areas of the individual’s life (school, work, family, society). In adolescence, the assessment of excessive or irrational fear from social situations may become especially critical, if we take into account the various development tasks unique of this age group that favor a greater vulnerability to experiences of social anxiety (Cunha, Pinto-Gouveia, & Salvador, 2008).

In his first studies, Sarason (1984, 1986) had already drawn the attention to the role performed by criticism in the development and maintenance of anxiety to tests/exams. In this line of thought, recent studies about self-criticism (Gilbert, 2000) suggests that human beings evolved towards being more and more responsive to social signs by others. Nevertheless, during the evolution process, humans may have become more self-conscious and able to think about themselves also in relational terms. In this manner, the nature of our internal dialogue became relational and our self-evaluations are adaptations of assessment processes originally designed for social interactions, so that the signs generated internally have the same physiological and emotional impact than social signs emitted externally.

From this perspective, if we possess the ability of representing different social roles, we also have different parts of the Self when distinct cognitive-emotional and motivational patterns emerge in the mind. These internal parts of the Self may have different voices and can compete, agree or disagree, support or attack mutually.
Hence, self-criticism appears as a psychological process which translates scrutiny and censorship of personal behaviors, thoughts and emotions (Whelton & Greenberg 2005). Through two distinct comparisons, although not contrary, the self-critical individual devalues and looks down at his/her qualities (Irons et al., 2006). However, comparison with others (compared self-criticism), or comparison with certain patterns of personal demands (internalized self-criticism) settle the subjective perception of a gap between real and ideal.

In the case of adolescents with tests’ anxiety, internal attacks often take place when they sense they have not matched a certain pattern (e.g., “I don’t understand any of this! Why can’t I solve this? I can’t go far . . .!”). The adolescent actually believes that this self-criticism process will press them to do better or to correct the mistakes. Melo (2006), in her study conducted in university context, evidenced the importance of self-criticism on the development of exam anxiety.

Another contribution that seemed interesting to explore for the intervention on tests’ anxiety originates from acceptance based therapeutic approaches and on the concept of mindfulness (Farmer & Chapman, 2008). In childhood and adolescence, this type of intervention has gained ground, showing to be especially effective in anxiety disorders (Greco, Blackledge, Coyne, & Ehrenreich, 2005). Acceptance skills and self-consciousness (mindfulness) consist of a persistent attitude of being in the present moment; a constant exercise of attention to the present, identifying thoughts, feelings and body sensations without judging them. Therefore, this kind of psychological process inverts the usual way of functioning and replaces the descending information processing by the ascending, outlining heuristic filters: memories, beliefs and cognitive distortions (Brown, Ryan, Creswell, & Niemiec, 2008). Scrutiny is compassionate and diametrically opposite to the inflexibility that characterizes self-criticism. The intervention based on this model lies upon the acceptance of internal experience and does not aim at the reduction of symptoms, but the commitment with important values and the pursuit in the sense of living according to them (Eifert, & Forsyth, 2005).

The concept of psychological acceptance refers to openness and availability to experience private events (e.g., body sensations, thoughts, feelings, memories) as they are, without struggle or defense (Hayes, Strosahl, & Wilson, 1999), assuming them as a process opposite to experiential avoidance. On the other hand, experiential avoidance is an omnipresent process, learnt in early years and reinforced by socio-verbal community throughout life, responsible for psychological inflexibility, which leads to the exaggeration of human suffering. A range of researches has shown a positive association between psychopathologic symptoms and efforts made to avoid emotions, thoughts, memories and other private events (Hayes et al., 1999; Eifert, & Forsyth, 2005).

In the case of adolescents with exam anxiety, due to the frequency of intrusive and dysfunctional thoughts, on one side, and the high emotional levels, on the other, we believe it is important to develop concentration skills with purpose and without critical judgment (mindfulness skills), as well as promote acceptance of internal experiences, imperfections, less successful performances, and difficult circumstances.

The present investigation intends to analyze the contribution of these new constructs, such as self-criticism, acceptance and mindfulness skills, in order to understand and intervene on test anxiety. From this point of view, we analyzed the relationship between these concepts, their predictive capacity and verify in what extent individuals with high anxiety to tests distinguish from individuals with low anxiety, in the way they criticize themselves, self-evaluate and observe and accept their inner experiences.

Method

Participants

The sample includes 449 high school teenagers, 211 boys (47%) and 238 girls (53%) distributed by the three school grades (10th, 11th and 12th grade), with a mean age of 16.8 (DP = 1.17).

Subjects are equitably distributed by school years and by age groups, with exception of the 18-21-year-old group, which presents, as expected, a minor number of individuals.

The socio-economic level of teenagers was determined by the average of parents’ categories, with a predominant high socioeconomic level (62.6%) in this sample.

There were no differences between boys and girls in what concerns their distribution by school years [$\chi^2(2) = 4.48; p = .107]$, by age groups [$\chi^2(3) = 6.26; p = .10]$], and by socioeconomic level [$\chi^2(2) = 1.23; p = .541]$.

Instruments

The following instruments were used: a) socio-demographic questionnaire to determine age, gender, school grade and socio-economic level; b) TAI (Spielberger et al., 1980) for exam anxiety assessment; c) FSCRS (Gilbert et al., 2004) to evaluate forms of self-criticism; SAASA to assess social anxiety in adolescents (Cunha, Pinto-Gouveia, Salvador, & Alegre 2004) and d) CAMM (Greco, Smith, & Baer, 2008) to measure acceptance and mindfulness in teenagers.

The Test Anxiety Inventory (TAI- Test Anxiety Inventory, Spielberger, et al., 1980; Portuguese version: Ponciano Loureiro, Pereira, & Spielberger, 2005) was conceived by Spielberger to evaluate individual differences of test anxiety in an academic context, taking it as a personality feature related with this specific situation.
The inventory consists of 20 items that aim to analyze the frequency with which anxiety symptoms are experienced, before, during and prior tests and exams. These items are distributed by two factors concerning worrying (W – worry) and emotionality (E – emotionality). Worrying involves the expression of fear of performance (e.g., to think about failure consequences), and Emotionality refers to physiological and affective reactions to test situation stress (e.g., feeling apprehension, worry, agitation or the heart beating fast). Items are answered on a 4-point Likert scale which varies from “Hardly ever” to “Almost always”. The global score may vary between 20 and 80 points and the anxiety level will be proportionate to the number of points.

The Test Anxiety Inventory was translated and adapted by Ponciano and colleagues for university Portuguese students, revealing good psychometric properties, namely internal consistency (α = .93) and temporal reliability (r = .69; p < .01), and the same factorial structure of the original version (Ponciano et al., 2005).

For the present investigation, Ponciano’s version has undergone slight changes to better adapt to the studied sample. Some concepts have been reformulated, once they did not relate to high school teaching; items language was adapted in order to make them clearer for this school level students. In our sample, this inventory revealed a good internal consistency, showing a Cronbach alpha value of .92 (Worry subscale: α = .84; Emotionality subscale: α = .87).

Self-criticism Forms and Self-Reassuring Scale (FSCRS - Forms of Self-Criticizing and Self-Reassuring Scale, Gilbert et al., 2004; Portuguese version: Castilho & Pinto-Gouveia, 2005) consists of a set of 42 items to evaluate how people criticize and reassure themselves “when things go wrong”. Participants answer to a range of situations, in a 5-point Likert scale (0 – I’m not like that to 4 – I’m exactly like that). This measure is composed by three factors: the Inadequate Self, assessing the feeling of inadequacy of the self when facing failure and recess (e.g. “I get easily disappointed with myself”); the Reassuring Self, which evaluates the capacity of the self to reassure, to look for comfort, to calm down and to be self-compassionate (e.g., “I can remind myself of my positive characteristics”); and the Hated Self, assessing the feeling of self-loath/hate and a destructive response when facing failures, characterized by an aggressive persecution to hurt him/herself (e.g., “I get so angry I want to hurt myself”). The higher the score in each factor, the more frequent is the corresponding self-criticism form.

For this investigation, and taking into consideration the mean age group (15-18 years-old) of our sample, we were cautious to reformulate some items, in order to make them more understandable for our participants.

In the current study, internal consistency values obtained in this scale were: .87 for the Inadequate Self sub-scale (original version, in English: .90), .82 for the Reassuring Self sub-scale (.86 in the original version, English) and .76 for the Hated Self sub-scale (.86 original version, English).

The Social Anxiety and Avoidance Scale for Adolescents (SAASA; Cunha et al., 2004) aims to assess the discomfort and avoidance level in a wide range of social situations representative of the most frequent social fears in adolescents (Cunha et al., 2004; Cunha, Pinto-Gouveia, & Salvador, 2007, Cunha et al., 2008).

SAASA is a self-report instrument composed by 34 items, describing social situations. All items are rated on a five-point Likert scale: anxiety subscale (1 – no anxiety; 2 – few anxiety; 3 – a little anxiety; 4 – a lot of anxiety; 5 – great anxiety) and the avoidance subscale (1 – never; 2 – sometimes; 3 – often; 4 – most of the time; 5 – almost always).

The total score, for each subscale, may range from 34 and 170 points. Higher scores indicate higher levels of anxiety and avoidance. SAASA showed good psychometric properties and a six factors structure was found in several studies: (1) Interaction in new social situations; (2) Interaction with the opposite sex; (3) Performance in formal social situations; (4) Assertive interaction; (5) Being observed by others; (6) Eat and drink in public (Cunha et al., 2004, Cunha et al., 2007, Cunha et al., 2008).

In this study, SAASA also presented an excellent internal consistency with Cronbach’s alpha of .94 and .92 for the anxiety and avoidance sub-scale, respectively.

Children’s Acceptance and Mindfulness Measure (CAMM; Children’s Acceptance and Mindfulness Measure, Greco et al., 2008; Portuguese version: Cunha, Pinto-Gouveia, & Paiva, 2010) was initially developed by Greco and Baer (2006) with the goal of evaluating children and adolescents individual differences concerning their ability to observe inner experience, to consciously accept their own internal experiences. It is a 25-item self-report instrument answered in a 5-point Likert scale: never – 0; rarely – 1; sometimes – 2; almost – 3; always – 4. Based on studies about item content and exploratory factor analysis, this scale was recently reformulated to a version consisting only of 10 items (Greco et al., 2008).

In the 10-item single-factor scale, scores vary from 0 to 40 points and the higher the score the higher is the acceptance of the individual and the consequent mindfulness features.

Previous studies suggest that CAMM presents good internal consistency (α = .80) and good concurrent validity.

In our sample this instrument (10 items version) revealed an acceptable internal consistency, with Cronbach’s alpha values of .70.

Procedures

After collecting the proper authorizations for the consecution of the study, the assessment battery was distributed to a pre-test group of 15 students from other schools. This pre-test confirmed the clarity of the items and allowed to realize the filling mean time.
The questionnaires were answered in group, in classroom context. Participation was voluntary and anonymity and confidentiality assured. The total filling in of questionnaires took in average 40 minutes.

Results

Statistical data analysis

In what concerns data analysis, we have used the statistic data analysis program SPSS (15.0 version).

Statistical procedures were chosen based on Pestana and Gageiro (2003) recommendations. Parametric tests were used because our sample size justified them. A significant level of .05 was considered (Howell, 2006).

Depending on comparison groups (gender, age, school grade and test/exam anxiety) t-tests or analysis of variance (ANOVA) were carried out for mean comparisons regarding study variables.

$X^2$ were calculated to compare frequencies between the different groups. We used Pearson coefficient to establish relations between the studied variables, and the hierarchic regression analysis to investigate the group of variables most likely to predict exam anxiety.

Influence of the socio-demographic variables on test/exam anxiety

When comparing test anxiety values depending on the socio-demographic variables (Table 1), using t-tests and ANOVA, we verified that there are significant gender differences ($t = -4.25; p = .001$), and socioeconomic level differences [$F(2, 442) = 8.46; p = .001$]. Girls, comparatively to boys, reveal higher anxiety scores ($M = 45.43; DP = 11.19$) and middle socioeconomic level adolescents present greater anxiety ($M = 46.40; DP = 10.83$), presenting significantly higher scores compared to high socioeconomic level adolescents ($p = .001$). There was no relevant effect of age groups [$F(3, 441) = .47; p = .706$] and of school grade on test anxiety [$F(2, 442) = 1.36; p = .259$].

Given the importance of gender in result differentiation, we also investigated its effect on the remaining studied variables. On table 2 we can see the obtained mean values in the self-report instruments according to gender. There are significant statistical differences between boys and girls concerning test/exam anxiety (TAI - total and emotionality factor, respectively: $t = -4.25; p = < .05$; $t = -5.03; p < .05$), self-criticism Inadequate Self dimension ($t = -3.98; p < .05$),

Table 1
Effects of gender, age, school grade, and socio-economic level variables on test anxiety measured by TAI

<table>
<thead>
<tr>
<th></th>
<th>TAI</th>
<th>SD</th>
<th>F/t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>40.85</td>
<td>11.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>45.43</td>
<td>11.19</td>
<td>-4.25</td>
<td>.001</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 years old</td>
<td>43.61</td>
<td>12.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>42.99</td>
<td>10.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>42.62</td>
<td>11.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-21</td>
<td>44.64</td>
<td>11.57</td>
<td>0.46</td>
<td>.706</td>
</tr>
<tr>
<td>School grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10th grade</td>
<td>44.15</td>
<td>12.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11th grade</td>
<td>43.45</td>
<td>10.54</td>
<td>1.36</td>
<td>.259</td>
</tr>
<tr>
<td>12th grade</td>
<td>41.98</td>
<td>11.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-economic level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>44.65</td>
<td>11.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>46.40</td>
<td>10.83</td>
<td>8.46</td>
<td>.001</td>
</tr>
<tr>
<td>High</td>
<td>41.63</td>
<td>11.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2
Means and standard deviations of studied variables according to gender

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>t</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>Total TAI</td>
<td>40.85</td>
<td>11.50</td>
<td>45.43</td>
<td>11.19</td>
<td>-4.25</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>TAI Worry</td>
<td>14.07</td>
<td>4.64</td>
<td>14.87</td>
<td>4.80</td>
<td>-1.79</td>
<td>.075</td>
<td></td>
</tr>
<tr>
<td>TAI - Emotionality</td>
<td>18.09</td>
<td>5.32</td>
<td>20.66</td>
<td>5.42</td>
<td>-5.03</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>FSCRS - Hated self</td>
<td>0.64</td>
<td>0.75</td>
<td>0.59</td>
<td>0.76</td>
<td>0.66</td>
<td>.512</td>
<td></td>
</tr>
<tr>
<td>FSCRS - Reassuring self</td>
<td>2.56</td>
<td>0.70</td>
<td>2.51</td>
<td>0.72</td>
<td>0.58</td>
<td>.561</td>
<td></td>
</tr>
<tr>
<td>FSCRS - Inadequate self</td>
<td>1.53</td>
<td>0.82</td>
<td>1.85</td>
<td>0.85</td>
<td>-3.98</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>SAASA - Total Anxiety</td>
<td>59.06</td>
<td>20.02</td>
<td>68.73</td>
<td>19.55</td>
<td>-5.08</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>SAASA - Total Avoidance</td>
<td>57.84</td>
<td>18.71</td>
<td>65.62</td>
<td>18.39</td>
<td>-4.36</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>CAMM 10</td>
<td>23.70</td>
<td>5.63</td>
<td>21.70</td>
<td>4.78</td>
<td>3.93</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

Note. TAI: Test Anxiety Inventory; FSCRS: Forms of Self-Criticizing and Self-Reassuring Scale; SASSA: Social Anxiety and Avoidance Scale for Adolescents; CAMM: Children’s Acceptance and Mindfulness Measure
social anxiety (anxiety and avoidance subscales, correspondently: \( t = -5.08; p < .05 \) and \( t = -4.36; p < .05 \)), and, last, acceptance and mindfulness (\( t = 3.93; p < .05 \)).

Except for acceptance and mindfulness dimension, in which boys (\( M = 23.70; DP = 5.63 \)) obtain higher scores than girls (\( M = 21.70; DP = 4.78 \)), the opposite pattern occurs in the remaining variables.

In summary, in our sample, girls present higher test/exam anxiety, social anxiety, more inadequacy feelings towards failure and less acceptance and mindfulness features, when compared to boys.

**Relationship between test/exam anxiety and social anxiety, self-criticism, and acceptance and mindfulness features**

As can be observed in Table 3, test/exam anxiety correlates positively and significantly with self-criticism factors of the Inadequate Self (\( r = .57; p < .01 \)) and the Hated Self (\( r = .38; p < .01 \)), as well as with anxiety and social avoidance (respectively, \( r = .30; p < .01 \) e \( r = .25; p < .01 \)). It also reveals a negative significant correlation with acceptance and mindfulness dimension (\( r = -.36; p < .01 \)) and the Reassuring Self (\( r = -.21, p < .01 \)).

In other words, we can state that in adolescents the greater the test/exam anxiety, the greater the feeling of inadequacy of the self towards failure, the greater the feeling of self-disgust and destructive answer when facing failures, and the greater the social anxiety. By the contrary, acceptance and mindfulness skills decrease, as well as the capacity of reassuring and being compassionate to oneself.

**Comparison study between test/exam anxiety groups**

Aiming at understanding in which variables students with higher test/exam anxiety levels differentiated, two groups were formed based on median TAI values. Adolescents with scores inferior to the median constituted the low test/exam anxiety group (LTA), and students whose scores were superior to the median formed the high test/exam anxiety group (HTA). Since significant differences were
observed in TAI results according to gender, this cutoff point based on median values was found separately for boys and girls (boys: $Mdn = 39$; girls: $Mdn = 45$). Subjects with median TAI scores were excluded from the groups. The low test/exam anxiety Group (LTA) represented 213 students (98 boys and 115 girls) and the high anxiety Group (HTA) was constituted by 214 teenagers (103 boys and 111 girls).

When the two test/exam anxiety groups are compared (Table 4), one observes a significant difference between them in all studied variables, showing that students with high test/exam anxiety equally have higher levels of negative self-criticism (inadequate self and Hated self), higher social anxiety scores (anxiety and avoidance), as well as lower acceptance and mindfulness scores and a minor reassuring capacity (reassuring self).

**Predicting test/exam anxiety variables**

To investigate the predicting value of self-criticism and accepting/mindfulness skills, concerning test/exam anxiety (total TAI), a Multiple Hierarchic Regression Analysis was carried out.

A Multiple Hierarchic Regression function was calculated, being composed by two blocks, corresponding to the nature of independent variables considered as relevant for the prediction of the dependent variable. This approach allows investigating whether the prediction can be improved by a variable, or group of variables, according to the effect of other variables.

Based on the described goal, we inserted the gender variable in the first block, since we found, in previous analysis, gender differences in several psychological measures. In the second block we inserted variables relative to the perception of the individuals about the way they criticize themselves (Hated self, inadequate and reassuring), and also about their acceptance of internal experiences and mindfulness skills.

Knowing that models for the formulation of multiple regression linear equations implicate the numeric character of dependent and independent variables, some adjusting procedures were necessary for gender. According to Pedhazur (1997), the problem about categorical variables (nominal or ordinal) may be solved with indicator variables (dummy).

As can be seen in Table 5, the first block of regression function explains 4.3% of the total variance and the second block contributed with 29.5%. The function as a whole explains 33.7% ($R^2 = .337$) of the total variance [$F(5, 412) = 41.92; p = .001$] of test anxiety.

Going to standardized regression coefficients (Beta values) that translate the predictive value of the different variables considered in the model (Table 6), gender variable reveals to be, in the first block, a predictive factor of test/exam anxiety. Based on the fact Beta values are positive, ($\beta = .206; p < .001$), we can state that being female (the indicator category) seems to be significantly associated to higher levels of test/exam anxiety.

When the two blocks are introduced, the higher Beta value is for the inadequate self ($\beta = .437; p = .001$), gender variable ($\beta = .110; p = .009$) and, finally, acceptance/mindfulness variable ($\beta = -.098; p = .036$). Hence, we can conclude that higher test/exam anxiety levels measured by TAI are associated to higher levels of negative self-criticism (inadequate self), female gender and low acceptance and levels.

**Discussion**

Given the high frequency of youngsters with test/exam anxiety and the disturbing character this phenomenon may assume, causing school, personal and social problems, we believe it is important to further study this subject in order to promote useful and effective intervention strategies to face these challenges.

Previous Portuguese studies, in university student samples, have shown test/exam anxiety as the main reason for specialized psychological support (Pereira, et al., 2004; Melo et al., 2006). We do not have empirical data, in high school
context, on test/exam anxiety, in Portugal, although it is consensual that it is a common and disturbing problem. In an international plan, excessive anxiety in evaluation situations, namely tests, exams and oral presentations, is one of the most prevailing conditions in children and adolescents (Beidel, & Turner, 1988; McDonald, 2001). Notwithstanding this information relevance, research, and therapeutic intervention even more, do not seem to accompany its high prevalence. In this line of thought, and under the light of recent therapeutic practices, like mindfulness and acceptance therapy and compassion therapy (Farmer & Chapman, 2008), our study aimed to analyze the role of these psychological processes about test/exam anxiety in high school adolescents.

Self-report instruments used in the investigation were subjected to slight adaptations for adolescents and their psychometric characteristics were studied in this specific sample, showing adequate qualities of precision and validity.

When analyzing the influence of socio-demographic variables, results show that girls manifest higher test/exam anxiety than boys, which is consistent with the literature on the subject. Among children, girls usually denote greater anxiety (cf. Beidel & Turner, 2006) and, according to DSM-IV-TR (APA 2002), epidemiological studies indicate that social anxiety is higher among women, although clinical samples nullify or reverse this effect. The meta-analysis study conducted by Seipp and colleagues (Seipp, 1991; Seipp & Schwarzer, 1996) with data obtained from the TAI in 14 different countries points to this clear trend of women with higher test/exam anxiety levels than men.

This pattern is most prominent in the emotionality factor scores than in the worry dimension results. Eventually, this cross-cultural trend is rooted in social stereotypes (Silvem & Katz 1986) which consider shyness acceptable and even desirable in women as in men it is unacceptable, and in socialization practices that encourage women to express their emotions and men to suppress them, including anxiety. Also, in Portugal, Melo’s study (2006) on college students found similar results in TAI, according to gender. We find, therefore, the effect of gender, which marks the studies on anxiety, particularly among adolescents (e.g., Cunha et al., 2004).

Concerning the role of the socioeconomic level, young people of average socioeconomic status exhibited greater test/exam anxiety, compared to the ones with a high socioeconomic level. Although adolescents with a low socioeconomic status presented higher levels of test/exam anxiety than the ones with a high level, these two groups did not differ significantly. The interpretation of these results requires some caution, since the low socioeconomic level in our sample was under-represented. In general, literature gives higher anxiety values for students coming from disadvantaged socio-economic classes (Zeidner 1998, Melo 2006). According to Zeidner (1998), these students enhance their perception of danger and insecurity to face challenges, developing, therefore, high levels of anxiety, when they verify they have fewer resources to cope with school demands than their colleagues. It is important to remember that adolescents in our study were attending high school, grade in which there are national standardized exams and whose results put intense pressure on teachers, parents and students. The results obtained in high school education are dependent on the means of application to higher education, this process being increasingly competitive, selective and anxiety-inducing. The resource to tutorials or additional paid classes to better prepare students, the possibility of access to private higher education institutions, in case they cannot have high grades for the desired course, are often resources lower classes do not have.

Age and school grade have not shown any relevant effect on test/exam anxiety, suggesting the subject homogeneity of our sample in developing terms.

The study on the relationship between test/exam anxiety and the remaining psychological variables revealed test/exam anxiety is positively connected to self-criticism forms, such as inadequate self and hated self, to social anxiety and avoidance. It also showed a significant correlation, although negative, with acceptance/mindfulness dimension and with the reassuring Self. In other words, in adolescents, the greater the test/exam anxiety, the greater the feeling of inadequacy of the self when facing failures, the greater the feeling of self-disgust and of a destructive answer towards failure, greater social anxiety and smaller capacity of acceptance/mindfulness, as well as smaller ability to reassure and be compassionate to oneself. These data comply with literature data, namely, the ones referring to positive association between social anxiety and test anxiety, highlighting the common evaluation anxiety base (Beidel, & Turner, 1988; Cunha et al., 2007; Zeidner, 1998). On the other hand, in what concerns self-criticism, Sarason (1984) and Melo’s studies (2006) had brought to evidence the same type of relationship between test anxiety and criticism, notwithstanding the different assessment instruments used in the various studies. Finally, concerning the acceptance/mindfulness process, there are no studies so far using these instruments, given the very recent development of these measures for adolescents. Nevertheless, other studies (Greco et al., 2005; Greco, Smith et al., 2008; Greco, Lambert, & Baer, 2008) have demonstrated that subjects with low acceptance and mindfulness skills present more anxiety problems, confirming the present investigation results.

In order to know in which variables students with low and high test/exam anxiety differed, two groups were created based on TAI results and gender. Comparison of these two groups revealed that the group of students with high test/exam anxiety showed significantly higher levels of negative self-criticism (inadequate self and hated self), higher levels of social anxiety (anxiety and avoidance) and lowest values of acceptance and mindfulness and the capacity for self-reassurance (reassuring self).

In a different perspective, we also tried to analyze the effect of the whole action of test/exam anxiety variables,
using a hierarchical multiple regression analysis. According to the results, gender, self-criticism and acceptance/mindfulness skills are the variables that best predict test anxiety. Thus, we can state that being female, having high levels of negative self-criticism (inadequate self) and low acceptance/mindfulness skills are associated with greater test anxiety levels, evaluated by TAI, in adolescents.

These results highlight that the way individual self-criticize, and their acceptance/mindfulness skills, translated by awareness in the present moment and acceptance of internal experiences (e.g., thoughts, emotions, bodily sensations) may have a role in the development and maintenance of test/exam anxiety. Recriminatory criticism helps to maintain and exacerbate insecurity, negative automatic thoughts, irrelevant and intrusive that affect test performance. In this way, they hinder the adoption of effective study strategies, as well as an appropriate test approach.

Limitations and future studies

This study, although exploratory, intends to provide clues and investigate the relationships between the variables under consideration in order to contribute to a better understanding of this frequent phenomenon responsible for the suffering of many adolescents.

A possible implication of our results involves the intervention with these students, in addition to the usual strategies, specifically contemplating critical self-evaluation aspects, promoting forms of reassurance acceptance. Thus, it may be important to help the adolescent to identify the internal process of self-criticism, deal with it, and learn to accept failures as part of human nature and forgiving it inside a new affective structure. It is worth investing in the development of intervention strategies to improve the response given by support facilities to students.

We are aware of the weaknesses of our study for its methodology and that a thorough study would involve the observation of other contextual and institutional variables and the use of more sophisticated methodologies.

Notwithstanding the limitations of this study inherent to the cross-sectional methodology used, which does not allow the establishment of causal relationships between variables, and data collection exclusively by self-report instruments, we believe to have contributed to a better understanding of this reality among Portuguese high school students.

References


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