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Portuguese Version of The Automatic Thoughts Questionnaire-Revised: Study of its Psychometric Properties and Relationship with Depressive Symptomatology in Adolescents

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Dissertação de Mestrado em Psicologia Clínica, subespecialização em Intervenções Cognitivo-Comportamentais em Perturbações Psicológicas e da Saúde sob a orientação da Professora Doutora Ana Paula Matos.

Versão Portuguesa do Questionário de Pensamentos Automáticos-Revisto: Estudo de Propriedades Psicométricas e Relação com Sintomatologia Depressiva em Adolescentes

A Depressão na adolescência é reconhecida como extremamente importante devido às suas consequências psicossociais, incidência e recorrência. O papel das cognições e dos pensamentos automáticos nesta perturbação é destacado por vários modelos cognitivos de psicopatologia. A avaliação destes pensamentos automáticos (*self-statements*) é essencial, não apenas na discriminação de sujeitos deprimidos e não deprimidos, como também devido à sua utilidade no contexto terapêutico.

O Questionário de Pensamentos Automáticos-Revisto (QPA-R; ATQ-R; Kendall, Howard, & Hays, 1989) foi desenvolvido para avaliar cognições negativas e positivas relacionadas com a depressão. É uma versão revista do Questionário de Pensamentos Automáticos (QPA-30; ATQ; Hollon & Kendall, 1980) que avalia exclusivamente pensamentos automáticos negativos associados com a depressão e que é reportado como uma medida que discrimina sujeitos deprimidos e não deprimidos em população clínica e normal, não só em adultos como em crianças.

O objetivo principal do presente trabalho foi estudar a versão Portuguesa do QPA-R numa população de 245 adolescentes com idades compreendidas entre 14 e 18 anos e apresentar as suas propriedades psicométricas, assim como as propriedades do QPA-30 (Hollon & Kendall, 1980), visto que nenhum dos questionários foi estudado na população Portuguesa. Procedeu-se também ao estudo da relação das cognições depressogénicas medidas pelo QPA-R com a sintomatologia depressiva.

Resultados da análise fatorial em ambos os questionários revelou que o QPA-30 é constituído por dois fatores e o QPA-R por três fatores, sendo dois deles os mesmos encontrados para os pensamentos negativos do QPA-30 e o terceiro composto por itens que medem pensamentos automáticos positivos. Visto que o QPA-R é a versão mais recente deste questionário, apenas os seus fatores foram considerados em análises posteriores. Os resultados indicam uma consistência interna adequada (α de .91 e .96, respetivamente) e correlações item-item total moderadas a elevadas, para ambos os totais da escala. A validade convergente foi verificada através das correlações positivas encontradas entre os totais destas medidas e os fatores do QPA-R, com medidas da depressão e com o autocriticismo. A validade

divergente foi comprovada através de correlações negativas entre os dois questionários e uma medida de autocompaixão. Os resultados indicaram também que o QPA-R discrimina com sucesso adolescentes que pontuam acima e abaixo do ponto de corte do CDI, provando a validade discriminante deste questionário. Tendo em conta o segundo objetivo deste estudo, o QPA-R foi também analisado na sua capacidade de predizer sintomatologia depressiva (CDI), tendo em conta as dimensões positiva e negativa dos dois conjuntos de itens que compõem o questionário. Os resultados parecem indicar que a dimensão negativa do QPA-R prediz a depressão e que esta predição aumenta quando é adicionada a dimensão positiva do questionário.

Os resultados encontrados relativamente às propriedades psicométricas do QPA-R em adolescentes parecem ser comparáveis às encontradas na população adulta e de crianças. Estudos futuros são necessários para analisar estas propriedades numa população clínica de adolescentes e examinar relações entre este questionário e outras medidas de processos cognitivos. Seria de interesse a reprodução destes resultados, sugerindo-se a exploração da associação do QPA-R com a sintomatologia depressiva.

Palavras-chave: QPA-R; QPA-30; pensamentos automáticos; avaliação; self-talk; cognições depressogénicas; psicopatologia; depressão.

Portuguese Version of The Automatic Thoughts Questionnaire-Revised: Study of its Psychometric Properties and Relationship with Depressive Symptomatology in Adolescents

Depression in adolescence has been acknowledged to be extremely important due to its psychosocial consequences, incidence and recurrence. Cognitive models of psychopathology have emphasized the role of cognitions and automatic thoughts in this disorder. Assessment of these self-statements has proved to be essential not only to distinguish between depressed and non-depressed subjects, but also because of its use in therapy (Hollon & Kendall, 1980).

The Automatic Thoughts Questionnaire-Revised (ATQ-R; Kendall, Howard, & Hays, 1989) was developed to assess negative and nonnegative self-statements related to depression. It is a revised version of the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) which exclusively accesses negative thoughts associated with depression and has been reported as a measure that successfully discriminates between depressed and non-depressed subjects in clinical and nonclinical population, not only in adults but also in children.

The main aim of the current work was, therefore, to study the Portuguese version of the ATQ-R in a sample of 245 adolescents (aged 14 to 18) and present its psychometric properties, as well as some of the psychometric properties of the ATQ-30 (Hollon & Kendall, 1980), since both questionnaires had never been studied in Portugal. In this study we also explore the association between cognitions measured by the ATQ-R and depressive symptomatology.

Factor Analysis was performed in both questionnaires. Two factors were found for the ATQ-30 and the same two factors plus a factor of *positive automatic thoughts* seemed to compose the ATQ-R. Since the ATQ-R is the most recent version of the questionnaire, only its factors were considered in posterior analysis. Both the ATQ-R and the ATQ-30 showed high internal consistency (α value of .91. and .96, respectively) and yielded moderate to high item-total score correlations. Convergent validity was supported by the positive correlation of total scores of the ATQ-30 and ATQ-R. Convergent validity was proved by the relation between ATQ-30 and ATQ-R total scores, as well as ATQ-R factors with severity of depression and self-criticism. Divergent validity was supported by negative correlations between

these measures and a measure of self-compassion. Discriminant validity of the ATQ-R was supported by examining whether adolescents who scored higher than a cut-off point in the CDI differed on the scale from a comparison group scoring lower. In light of the other aim of this study, the capacity of the ATQ-R in predicting depressive symptomatology (CDI) was studied by considering the two dimensions of the ATQ-R (negative and positive cognitions). It seems that the ATQ-R can successfully predict depressive symptomatology and that positive cognitions increase this prediction.

The findings parallel those evident in the study of depression among adults and children. Further work is needed to study the properties of the questionnaire in clinical populations of adolescents and examine the relation of the ATQ-R to other measures of cognitive processes. The results found in this study should be replicated and association of the ATQ-R with depressive symptomatology should be further explored.

Key Words: ATQ-R; ATQ-30; automatic thoughts; assessment; self-talk; depressogenic cognitions; psychopathology; depression.

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Index

I - Introduction

Depression is considered to be one of the most common mental health problems in the population in general (Schulberg et. al, 1998; Murray & Lopez, 1996) and also amongst children and adolescents (Costello, Egger & Angold, 2005; Essau & Chang, 2009). Research with both community and clinical populations has established that depressive symptoms and disorders occur with increasing prevalence over the course of childhood and adolescence (e.g., Fleming & Offord, 1990; Petersen, Compass, Brooksgunn, Stemmler & Grant, 1993; Lewinsohn et. al, 1994; Pine, Cohen, Cohen & Brook, 1999; Mesman & Koot, 2000; Kessler, Avenevoli & Merikangas, 2001; Fergusson, Horwood, Ridder & Beautrais, 2005; Rudolph, Hammen & Daley 2006 Rudolph, 2009; Costello, Copeland, & Angold, 2011). Depressive disorders are classified under the broad category of mood disorders (APA, 2000) in which Major Depressive Disorder (MDD) and Distimic Disorder are included. Studies report that up to 20% of adolescents in the general population meet criteria for MDD sometimes in their lives (for a review of prevalence studies of MDD in adolescents, see Essau & Chang, 2009) and report high comorbidity with other psychiatric disorders such as attention-deficit/hyperactivity disorder (ADHD), disruptive behavior and anxiety disorders (Goodyer & Cooper, 1993; Angold & Costello, 1995) as well as impairment in various life domains associated with depression, suicidal ideation, suicidal attempts and substance abuse (Birmaher et al., 1996; Puig-Antich et al., 1993; Galambos, Leadbeater & Barker, 2004). Also, depression is characterized by a recurring course, with about one third of adolescents having another depressive episode within a five-year period (Essau & Chang, 2009) and an onset of clinical depression in pre-adolescence and adolescence is considered to be a risk-factor to adult depression (Harrington, Fudge, Rutter & Pickles, 1990; Kovacs, Feinberg, Crouse-Novak, Paulauskas, & Finkelstein, 1984;).

Cognitive processes have been accorded a central role in the etiology, treatment, maintenance, and remission of depression (e.g., Abramson, Metalsky & Alloy, 1989; Alloy, 1988; Beck, 1987). One of the major cognitive theories of depression is Beck's Cognitive Model. According to this model, an individual's emotions and behaviors are influenced by his or her perception of events (Beck, 1963; Beck, Rush, Shaw & Emergy, 1979). Beck's information-processing model implicates three aspects of cognitive functioning in depression. Firstly, depression is associated with the "negative cognitive triad" which is the tendency to possess negative perceptions of the self, the world and the future. Secondly, depressed individuals are believed to exhibit negative cognitive schemata, which are viewed as stable internal structures in memory that guide information processing and stimulate the self-critical beliefs and attitudes characteristic of depression. Finally, depressed individuals are believed to engage in systematic biases or errors in thinking, which lead to idiosyncratic interpretations of situations and events – negative automatic thoughts. These

errors maintain the belief in the validity of the negative concepts despite all evidence of positive factors in their life (Beck, 1963; Beck et al., 1979).

Automatic thoughts (Beck, 1979) are also known as cognitive self-statements (Kendall & Hollon, 1981). According to these authors, "*self-referent speech most frequently refers to comments (internal or otherwise) in which* the audience is *primarily the person him/herself, not just to those in which the individual is the object of the statement"* (cit. in Kendall, Howard & Hays, 1989, p.584). Negative automatic thoughts, according to Moore & Garland (2003), are essential to depression, in the way that they help to maintain the depressed humor in individuals. As the name states, they are automatic, popping into one's mind without conscious reasoning. They create a cycle where the patient's perspective becomes biased. Several studies based on the cognitive behavioral model of depression have indicated that depressed individuals present significantly more negative automatic thoughts than control groups (e.g., Nelson & Craighead, 1977; Hollon & Kendal, 1980; Harrel & Ryon, 1983; Kendall, Howard & Hays, 1989).

Drawing on Beck's cognitive model of depression in adults, several investigators have examined cognitive errors and distortions that may be associated with depressive symptoms. Hollon and Kendall (1980) developed a questionnaire that identified the covert self-statements, reported by depressives as being representative of experienced cognitions. Although a number of questionnaires have been developed to assess automatic thoughts (see review by Glass & Arnkoff, 1997), the Automatic Thoughts Questionnaire (ATQ-30, Hollon & Kendall, 1980) is one of the most widely used measures of depression-related negative self-statements.

While most research focuses on the negative aspects of reported self-referent speech, Kendall (1983) suggested that although treatment-produced gains may be more associated with a reduction in negative thinking, examination of both positive and negative dimensions of cognition could contribute to greater understanding of health-pathology relationships. The potential role and contribution of positive cognition and affect in the discrimination of depression from anxiety has been recognized in several studies with adults (Burgess & Haaga, 1994; Jolly & Wiesner, 1996; Watson & Clark, 1984; Watson, Clark & Carey, 1988; Watson & Tellegen, 1985) and its value on the discrimination between these two groups was considered when creating the revised version of the ATQ-30, by integrating a number of positive/nonnegative self-statements (Kendall et al., 1989). This topic will be explained in the subsequent sections.

Having in count that the majority of studies have focused only on the negative dimension of self-talk items/cognitions, further investigation of the roles of positive and negative thoughts was also important (Kendal et. al, 1989). Therefore, Kendall et al. (1989) developed a study that tested the hypothesis that positive and negative self-statements and the balance between these two were differently associated with psychopathology, with the intention of revising the Automatic Thoughts Questionnaire. Evidence in this study showed that dysphoric/depressed groups had significantly more negative self-talk and significantly less-frequent occurrence of positive self-

talk than normal or overly optimistic subjects or than the inpatient psychiatric group with other diagnoses. Results of this study showed that by including positive and neutral self-statements in an expanded ATQ, the items accounted for significantly more variance than the ATQ-30 alone.

The Automatic Thoughts Questionnaire – Revised

The Automatic Thoughts Questionnaire-Revised (Kendall et al., 1989) is a self-report measure which evaluates the frequency of occurrence of automatic thoughts related to depression in adults. It subsists of 40 items, which consist of self-statements (e.g. "I'm worthless", "I wish I were somewhere else") rated on a 5-point Likert scale that measures the frequency of the thought occurred to the person in the previous week. Ratings rage from 1 ("not at all") to 5 ("all the time").

It is a revised version of the ATQ (Hollon & Kendall, 1980), which is a 30-item questionnaire (ATQ-30), designed to measure the frequency of occurrence of automatic negative thoughts (negative self-statements) and intrusive cognitions associated with depression in adults. The instrument contains statements devised specifically to assess depressive thoughts that emerge in the stream of consciousness. The original version (Hollon & Kendall, 1980) of this inventory was found to have satisfactory reliability coefficients and to discriminate significantly between depressed and non-depressed groups. Numerous studies demonstrated a strong association between automatic thoughts assessed by the ATQ-30 and depressive symptoms not only in adults (e.g. Dobson & Breiter, 1983; Harrel & Ryon, 1983; Hollon, Kendall & Lumry, 1986), but also in children (Kazdin, 1990). However, negative self-statements measured by the ATQ-30 do not appear to be specific to depression, as negative automatic thoughts measured by the ATQ-30 have also been associated with anxiety (Hollon & Kendall, 1980).

In the revised version of the ATQ-30 (ATQ-R; Kendall et al., 1989), having in count the results referred earlier that positive cognitive and affective variables are distinctive features of depression and relatively independent of anxiety (e.g., Nelson & Craighead, 1977; Hollon & Kendal, 1980; Harrel & Ryon, 1983; Kendall et al., 1989), a series of positive/nonnegative self-statements were added to the original ATQ-30 negative items. This permitted examination of whether depressed subjects rated positive self-statements more negatively. Results showed that by including these self-statements in an expanded ATQ-30, the total of the ATQ-R accounted for significantly more variance than the ATQ-30 alone, when predicting depression. Also, ATQ-R evidenced increased predictiveness in hospitalized groups and comparison groups. Therefore, and given the evidence that depressive mood is linked to the presence of negative automatic thoughts and the absence of positive ones, while anxious mood has negative affect but is unrelated to positive affect (Watson & Tellegen,

1985; Kendall & Watson, 1989), the ATQ-R may be especially helpful in identifying depression separate from anxiety disorders (Kendall et al., 1989).

Several studies have proved the internal consistency of the ATQ-30 (Dobson & Breiter, 1983; Deardorf, Hopkins & Finch, 1984; Hill, Oei & Hill, 1989; Ghassemzadeh, Mojtabai, Karamghadiri & Ebrahimkhani, 2005; Sahin & Sahin, 1992; Stephen, 1994) and, although fewer authors have studied the psychometric properties of the ATQ-R (Kendall et al., 1989), the authors report that the psychometric properties of the this questionnaire are comparable to those of the ATQ-30, which indicate excellent internal consistency and good concurrent validity with measures of depression (Hollon & Kendall, 1980). Indeed, the original version of the ATQ-30 was found to have satisfactory reliability and validity among clinical and non-clinical samples (Hollon & Kendall, 1980). Additional studies have further supported the adequacy of the ATQ-30 in terms of internal consistency and validity among students (Dobson & Breiter, 1983 and Hill et al., 1989) psychiatric patients (Harrel & Ryon, 1983; Hill et al., 1989; Hollon et al., 1986) the general community (Netemeyer et al., 2002) and also among children (Kazdin, 1990). To our knowledge, no studies of the ATQ-30 were carried in adolescents' populations. This instrument has also been translated into a number of different languages, ranging from Turkish (Sahin & Sahin, 1992), Chinese (Cao, Chen, Tang & Song, 2001), Norwegian (Chioqueta & Stiles, 2004), Persian (Ghassemzadeh et al., 2006) and Malaysian (Oei & Mukhtar, 2008) testifying to its worldwide applicability. A growing number of studies also reported evidence of discriminant validity (Dobson & Breiter, 1983; Hollon & Kendall, 1980; Ghassemzadeh et al., 2006) and concurrent validity (Hollon & Kendall, 1980; Clark, 1988; Chioqueta & Stiles, 2004). Positive relationships were found between the ATQ-30 and a variety of depression instruments such as the Beck Depression Inventory (BDI) (Dobson & Breiter, 1983; Ghassemzadeh, et al., 2006), the Minnesota Multiphasic Personality Inventory-Depression Scale (Hollon & Kendall, 1980) and the State-Trait Anxiety Inventory (Hollon & Kendall, 1980), regardless of the sample (clinical or non-clinical). The ATQ-30 has also demonstrated sensitivity to treatment effects (Clark, 1988; Simons, Garfield & Murphy, 1984).

Results pertaining to the factorial validity of the ATQ-30 have been inconsistent. In the original version, Hollon & Kendall (1980) performed a principal component analysis and found four components — "*Personal Maladjustment and Desire for Change*", "*Negative Self-Concept and Negative Expectations*", "*Low Self-Esteem*" and "Giving Up/Helplessness". The variance accounted by these factors, and the fact that almost all of the items showed substantial correlations on at least one of the other components, suggested that a single factor likely underlies the scale. Different factorial structures of the ATQ-30 have been revealed in subsequent research. Deardorf, et al. (1984) found three factors among factory workers and only 7 of the items were the same as those identified by Hollon and Kendall (1980), with several items correlating with other

components. The authors reported a single factor might underlie the ATQ-30. The same was reported by Kazdin in children (1990), where results suggested that the scale could e represented by a single factor; in the French version of the questionnaire, which revealed one main interpretable factor labeled "*Negative Self-Concept*" (Charles, Bouvard, Mollard & Cottraux, 1989); and in general community (Netemeyer et al., 2001). Two factors ("*Negative Self-Concept and Negative Expectations*", and "*Personal Maladjustment and Desire for Change"*) were revealed among undergraduate students (Stephen, 1994) and in the Norwegian version of this questionnaire, although labeled "*Negative Self-Concept and Personal Maladjustment*" and "*Desire for Change and Negative Expectations*" (Chioqueta and Stiles, 2006). With samples from Turkey, Sahin and Sahin (1992) found five interpretable factors labeled *"Negative Self Concept"*, *"Confusion and Escape Fantasies"*, *"Personal Maladjustment and Desire for Change"*, *"Loneliness/Isolation"*, and *"Giving Up/Helplessness"*. Finally, Bryant and Baxter (1997) used 304 college students in a confirmatory factor analytic study. They found marginal levels of fit for the four-factor solution originally identified by Hollon and Kendall (1980). They also found that the correlations among the four factors had a median value of .87 and that a single dominant second-order factor underlies the 30-item ATQ. Important conclusions can be drawn by this review of the factors analyzed in the ATQ-30. Firstly, as Netemeyer et al. (2001) stated, although most studies have found more than one factor, all studies show that a single substantive factor likely underlies the 30 items of the ATQ-30, with high coefficient alphas for scores on the 30-item ATQ-30 score, moderate to high item-total correlations and several studies proving all items successfully discriminate between depressed and nondepressed groups (Kazdin, 1990; Sahin and Sahin, 1992). In fact, studies have shown that variations of the original four factors identified by Hollon and Kendall (1980) do exist, but the replicability of items to those factors across the studies is extremely mixed. Furthermore, regardless of the number of factors found, all studies have routinely summed across the scores on the 30 ATQ items, treating the scale as if it were represented by a single factor or dimension (Netemeyer et al., 2001).

Compared to the amount of studies that have reported psychometric properties of the ATQ-30, to the extent of our knowledge, fewer are the studies in which the psychometric properties of the ATQ-R were addressed. Because the original authors (Kendall et al., 1989) report that the psychometric properties of the this questionnaire are comparable to the original ATQ-30, studies using the ATQ-R have analyzed this scale in terms of internal consistency and correlation to other measures by addressing the total scores of the 30 negative items of the ATQ-30 and the 10 positive/nonnegative self-statements which were added in the ATQ-R. Burgess & Haaga (1994) revealed high internal consistency for the ATQ-R in a group of undergraduate psychology students (mean age = 19.6), revealing a high internal consistence of the 10 positive items added to the

ATQ-R (.91) and strong associations with depressive symptoms and specificity to depressive symptoms, rather than anxiety symptoms. Donnelly, Renk, Sims & McGuire (2010) in a study with college students (from 17 to 23 years) found adequate internal consistency for the students scale (.84 for positive items and .95 for negative items). Also, in a study by Brinthaupt, Hein & Kramer (2011) with students from undergraduate psychology classes (mean age = 23.74), high internal consistency was found for the overall ATQ–R (α = .88) as well as the positive (α= .87) and negative (α= .95) set of items. Furthermore, a Japanese version of the ATQ-R was tested in university students (Kodama, Katayanagi, Shimada & Sakano, 1994) reporting an α of 0.94 for negative items a α 0.88 for the positive items. A short 15-item form of the ATQ-R has also been reported by Netemeyer et al. (2002) to have high levels of reliability and validity (α = 0.96). The nature of automatic thoughts in the ATQ-R has also showed to be similar across Western cultures in a cross-cultural comparison of a American and Spanish Students (Calvete & Connor-Smith, 2005), where both negative and positive thoughts revealed an high internal consistency (.97 and .87 respectively). Scores on the ATQ-R have also been reported to correlate significantly to the BDI (McGillivray & McCabe, 2005). In Portugal, the only study using the ATQ-R, exclusively translated the instrument and addressed its validity to measure automatic thoughts in a clinical population of adults with MDD. The results showed high internal consistence for both negative items of the ATQ-30 (.91) and the positive items (.94) (Borralha, 2011).

II - Aims

Although recognized by several authors for their importance, not only in clinical practice but also in research, neither the «Automatic Thoughts Questionnaire» or its revised version were, till now, examined in their psychometric qualities in the Portuguese Population. Also, to date, the ATQ-30 and the ATQ-R have been studied exclusively in relation to children and adult depression.

The present study intends to analyze the psychometric properties of the Portuguese version of the ATQ-30 and of the ATQ-R in a sample of adolescents from 14 to 18 years old, potentially depressed and non-depressed, so that this instrument may be used in Portugal and with adolescents.

The investigation of the psychometric properties of such instruments in a different cultural setting may expand their theoretical and empirical validity and most importantly may provide further evidence for the universality of the constructs they are intended to measure.

III - Method

Participants

The sample for this study comprised 245 students who completed the questionnaires as part of a larger study of Depression in Adolescence, in a classroom setting. The sample (n = 250) consisted of 157 female students (64,1%) and 88 male students (35,9%), aged 14-18, mean age 15,61 (SD = 1,3).

In order to test the temporal stability of the instrument, 50 of these students were randomly selected four weeks later and asked to answer the ATQ-30 and the ATQ-R questionnaires. The final sample consisted of 48 students (2 students were excluded due to problems in the completition of the questionnaire), 34 female students (70,8%) and 14 male students (29,2%), mean age 15,67 (SD= 0,9).

Measures

Automatic Thoughts Questionnaire (ATQ-30; Hollon & Kendall, 1980). The ATQ consists of 30 negative self-statements related to depression. Participants are asked to endorse the frequency of each thought during the preceding week, on a 5-point Likert scale (from 1 = not at all, to 5 = all the time). ATQ-30 scores are obtained by summing all responses, for a range of total scores of 30-150. A high total score indicates more frequent negative cognitions. In the original study, the Cronbach's α of the scale was .96. This instrument was never used before in Portugal and, in light of the aims of this study, some of its psychometric properties will be analyzed in the present study, where we obtained a Cronbach's α value of .91.

Automatic Thoughts Questionnaires – Revised (ATQ-R; Kendall, Howard & Hays, 1989). The ATQ-R is a revised version of the ATQ-30 which consists of the same 30 negative self-statements related to depression used in the ATQ-30 with an addition of 10 positive self-statements. Participants are asked to endorse the frequency of each thought during the preceding week, on a 5-point Likert scale (from 1 = not at all, to 5 = all the time). ATQ-R total score is obtained by inverting the 10 nonnegative items and summing all items for a range of total scores of 40-200. A higher score indicates, as in the ATQ-30, a higher frequency of the thought. In the original study of this scale, the coefficient alpha was found to be .90. To our knowledge, the ATQ-R was only used once before in Portugal in a study by Borralha (2011), which used the ATQ-R as a measure of frequency of negative and positive automatic thoughts related to depression in adults. Internal consistency in the present study was measured and a high internal consistency was revealed for both negative and positive automatic thoughts (.91 and .94 respectively), as well as for total score of the scale (α = .96).

Children's Depression Inventory (CDI; Kovacs, 1985, 1992; Marujo, 1994). The CDI consists of a self-report inventory composed of 27 items rated on a three-point Likert scale, which evaluates the presence and severity of specific depressive symptoms in children and adolescents aged between 6 and 18 (Kovacs, 1992). The total score of this scale ranges between 0 and 54 points and a higher score indicates a higher severity of depression. In the original study, Cronbach's α of the scale varied between .70 and .89 for the total scale (Kovacs, 1985). The Portuguese version of the CDI was validated by Marujo (1994) and a year later, Dias & Gonçalves (1999) studied its psychometric properties in 191 children and adolescents from Braga and Porto. Both studies found high Cronbach's α values (between .80 and .84). However, these authors (Dias & Gonçalves, 1999) could not find the 5 factors described by Kovacs (1983). There is no consistency in literature in what concerns the cut-off score points that are able to delineate clinical levels of depression (Simões, 1999). In the first study of validation to the Portuguese population (Marujo, 1994) the cut-off point considered was 33,7. However, the score of 19 was considered to be a good predictor of depression in Portuguese adolescents between 13 and 17 years by Passos & Machado (2002). Also, according to Simões (1999) it is possible to use a cut-off score correspondent to the 10% higher results in the distribution and in the American population a score equal or higher than 19 is frequently referred to as a score that is able to distinguish depressed from non depressed subjects. In the present study, the cut-off score found when using the 10% higher results in the distribution was 19 and this was the chosen cut-off point to distinguish potentially depressed subjects from nondepressed in our study. The internal consistency of the CDI was also calculated and a satisfactory Chronbach's α was obtained (.81).

Forms of Self-Criticizing and Reassuring Scale (FSCRS; Gilbert, Clarke, Hempel, Miles, & Irons, 2004; Portuguese version by Castilho & Pinto-Gouveia, 2011). The FSCRS is a 22-item self-report questionnaire, which asks participants to rate how they might typically think and react when things go wrong for them. The scale is composed by 22 items rated on a 5-point likert scale. Factor analysis of the scale suggested three factors: *"inadequate self"* (a sense of feeling internally put-down, inadequate and defeated), *"hated self"* (a sense of self-dislike and aggressive/persecutory desires to hurt the self) and *"reassured self"* (a sense of concern for the self and efforts to encourage the self when things go wrong). The first two factors represent the two forms of self-criticalness and in the same way as Gilbert et al. (2006), we combined *"inadequate self"* and *"hated self"* subscales to give one score, referring to it as trait self-criticalness. In the original study by Gilbert et al. (2004), Cronbach's *α* of above 0.86 for each of the subscale were found. The Portuguese version of this scale (Castilho & Pinto-Gouveia, 2011) also obtained high Cronbach's α values (*"inadequate self"*, α = .89; *"hated self"*, α = 67; *"reassured self"*, α =. 87). In the present study, the alphas found for each scale were .90 for the *"inadequate self"*, .76 for the *"hated self"* and .837 for the *"reassured self"*. The Chronbach's α

for *trait self-criticalness* in the study of Gilbert et al. (2006) was .91; the same α value was found for *trait self-criticalness* in the present study (.91).

Self-Compassion Scale (SELFCS; Neff, 2003; Portuguese translation and adaptation by Castilho, Pinto-Gouveia & Duarte, manuscript in preparation, 2013). The Self-Compassion Scale is a self-report measure composed by 26 items that measure six components: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness and Over-Identification. Each item is rated on a five-point Likert scale accordingly to how frequent does the individual act towards himself in difficult times (1= "Almost never" to 5="Almost always"). Subscale scores are obtained by calculating the mean of subscale's items responses. The total self-compassion score can be obtained by reversing the score the negative subscale items (i.e. self-judgment, isolation, and over-identification) and then compute a total mean. For the purpose of this study only the total self-compassion score was used. The original scale revealed to possess a very good reliability, with a Cronbach's α value of .92 and a test-retest reliability of .93 (Neff, 2003). In the present study, the Cronbach's α value was .85.

Procedures

After guarantying the ethical aspects related to the authorization of the use of the ATQ-R in Portugal by the original author, the adaptation of the ATQ-R to Portuguese was done using the back-translation method. First, a bilingual psychologist translated the English ATQ-R into Portuguese. Second, another bilingual psychologist translated the Portuguese version back into English. The original source and the back-translated items were compared for equivalence of meaning, and discrepancies were corrected. The process continued until no semantic differences were noticed between the Portuguese and English versions. The instrument was then piloted with a small sample of 10 students aged 15 to 18, who completed the questionnaire individually in order to test language, comprehension, and cultural and age appropriateness.

Before the beginning of the study, all procedures were approved by data protection and ethical commissions national institutes as well as school directors. Participants were recruited in schools from Leiria and Pombal. Each participant was given a brief description of the nature of the study and of the protocol. Upon their agreement to participate, all participants were asked to signed informed consents and participants younger than 18 would be asked to take the informed consents home to their parents, who had to authorize their participation in the study. Confidentiality and anonymity were assured. In the arranged date, participants were given a battery of self-report questionnaires, administered in the same order, which were filled in the presence of the researcher. The completion of the battery took approximately 45 to 60 minutes to complete. In a few cases, the students requested sporadic assistance when having doubts, the researcher tried to

answer such questions while at the same time trying to avoid influencing the participant's responses.

Data Analysis

Data analyses were conducted using SPSS (Statistical Package for the Social Sciences), version 20 (IBM Corp, Armonk, NY, USA). Factor analyses were also completed to examine the internal structure of the scale, for both the ATQ-30 and the ATQ-R. A principal-components analysis with a varimax rotation (the one used by the original authors, Hollon & Kendall, 1980) was computed for both questionnaires. Selection of the number of factors to be rotated was based on conjunctive criteria requiring: (a) the Kaiser criterion of eigenvalue of the factor to be greater than 1; (b) analysis of *Scree-Plot* (c) percentage of variance explained by the factors (Maroco, 2010). The Kaiser-Meyer Olkin measure of sampling adequacy and the Bartlett's Test of Sphericity were used to confirm the adequacy of the data for posterior analysis. Items with a factor loading <.50 were excluded since the authors (Hollon & Kendall, 1980) used loadings over .50; items which loaded on more than one factor were also excluded unless differences between cross-loadings was superior than 1 (Floyd & Widaman, 1995). Communality values were considered only when superior than .35, which is the cut-off point suggested by Tabachnick e Fidell (2007).

Chronbah's alpha coefficients (α) and individual item-total score correlations were computed to evaluate the reliability of the questionnaires. Descriptive statistics were conducted to explore the sample characteristics in regard to the study's variables. Gender differences and age-differences were tested using independent samples t-tests.

Pearson correlation coefficients (Pearson's r) were performed in order to examine convergent and divergent validity and to explore the relationship between the variables in study, as well as the temporal stability of the instrument. Correlation values of .10 were considered of low magnitude, .30 moderate and correlations equal or superior to .50 were considered of high magnitude (Cohen, 1988). To examine discriminant validity, the CDI was used with the cut-off point of 19 to create two groups: potentially depressed versus no depressed adolescents. Chi-squares were computed to investigate if differences between these two groups resulted from gender or age-differences. T-Tests were performed for each gender to see if total scores of the ATQ-30, the ATQ-R and its factors were significantly different for the depressed an nondepressed groups.

A two-steps hierarchical multiple regression was computed, considering the addition of the score for the positive/nonnegative items, to test the variance accounted for the ATQ-30 and the ATQ-R when using the CDI as a dependent variable. The same analysis was computed using three-steps hierarchical multiple regression in order to use gender as well as a predictor.

IV – Results

Preliminary Analysis

The assumption that the variables are normally distributed was assessed with the Kolmogorov-Smirnov test as well as through the analysis of Skewness and Kurtosis coefficient values. The results of these analyses indicate that the variables were not normally distributed. However, parametric tests were used because the sample was large (more than 200 cases, see Tabachnick & Fidell, 2001, p. 75) and robust enough to tolerate this violation (Cone and Foster, 1993; Pallant, 2005). Analysis of the residual scatter plots were performed since it serves as a test of assumptions of normality, linearity and homoscedasticity (Tabachnick & Fidell, 2007). The residuals were normally distributed and had linearity and homoscedasticity. Additionally, the independence of errors was analyzed through the value of Durbin-Watson (1.065 for the first model and 1.075 for the second model tested). Finally, multicollinearity or singularity was analyzed through Variance Inflation Factor (VIF) values. No evidence of β estimation problems was detected (VIF < 5). In sum, the results indicate that these data are adequate for regression analyses.

Factor Analysis

Factor analyses were completed to examine the internal structure of the scale, for both the ATQ-30 and the ATQ-R. A principal-components analysis with a varimax rotation was computed for both questionnaires since it was the same used by Hollon & Kendall (1980) for the ATQ-30.

Concerning the ATQ-30, examination of the Kaiser-Meyer Olkin measure of sampling adequacy (KMO=.959) and of the Bartlett's Test of Sphericity ($\chi 2$=4795.233; p=.000) suggested that the sample was factorable. The analysis conducted using eigenone criterion and a loading of .50 or higher (criterion used by the original authors) suggested the extraction of two factors, which explained 54% of the total variance. The first factor accounted for 28.836% of the variance, while factor II accounted for 25,293% of the variance.

As presented on table 1, items loading on the first factor named "*Low/Negative Self-Concept and Negative Expectations"* appear to reflect perceptions of Low/Negative Self-Concept (most items labeled by original authors as *Low Self-Esteem and Negative Self-Concept* fit in this dimension) and Negative Expectations (most items labeled in the factors originally found by the authors as *Giving up/helplessness* and *Negative Expectations*). Factor II seemed to consist of items reflecting *Personal Maladjustment and Desire for Change* (same dimensions as the ones found in the original authors, with a slight difference in the items that fit here). Three items (item, 6, 19 and 27) failed to meet the minimum criteria of no cross-loadings

differences of less than .1, suggesting their elimination because they do not clearly contribute to a single factor. Communalities were all above .4, confirming that each item shared some common variance with other items.

Table 1. Principal components analysis for the ATQ-30: items composing each factor and respective loadings, alpha values and means for each factor, communalities for each item, as well as item-total correlations and α of the total scale if the item was to be deleted. *Note: Output criteria was selected in such a way that correlations <.5 were not considered.*

Factors	F_1	F_2	Communalities	*r* item-total	α if item deleted
Factor 1 - Low/Negative Self-Concept and Negative Expectations (α = .939) M = 26.20; S.D. = 10.24 Female: M = 27.26; Male: M = 24.30					
8. I'm so weak.	.68		.53	.65	.96
10. I'm so disappointed in myself.	.51		.49	.68	.96
11. Nothing feels good anymore.	.63		.43	.56	.96
12. I can't stand this anymore.	.60		.52	.69	.96
13. I can't get started.	.63		.48	.62	.96
16. I can't get things together.	.62	.50	.63	.78	.96
17. I hate myself.	.70		.63	.74	.96
18. I'm worthless.	.69		.63	.75	.96
21. I'm a loser.	.67		.54	.66	.96
22. My life is a mess.	.55		.49	.67	.96
23. I'm a failure.	.77		.64	.67	.96
24. I'll never make it	.56		.54	.71	.96
28. My future is bleak.	.67		.59	.64	.96
29. It's just not worth it.	.65		.59	.73	.96
30. I can't finish anything.	.73		.58	.66	.96
Factor 2 - Personal Maladjustment and Desire for Change (α = .909) M = 28; S.D. = 9.57 Female: M = 29.53; Male: M = 25.25					
1. I feel like I'm up against the world.		.61	.51	.66	.96
2. I'm no good.		.58	.56	.72	.96
3. Why can't I ever succeed?		.66	.48	.58	.96
4. No one understands me.		.74	.56	.59	.96
5. I've let people down.		.67	.48	.56	.96
7. I wish I were a better person.		.56	.46	.63	.96
9. My life is not going the way I want it to.		.52	.43	.63	.96
14. What's wrong with me?		.66	.65	.77	.96
15. I wish I were somewhere else.		.57	.41	.58	.96
20. What's the matter with me?		.63	.61	.74	.96

25. I feel so helpless.		.61	.61	.75	.96
26. Something has to change.		.65	.49	.61	.96
Items that significantly load in more than one factor					
6. I don't think I can go on.	.53	.50	.53	.71	.96
19. I wish I could just disappear.	.51	.55	.57	.73	.96
27. There must be something wrong with me.	.53	.62	.66	.79	.96

For the ATQ-R, the same procedure was adopted and examination of the Kaiser-Meyer Olkin measure of sampling adequacy (KMO=.948) and of the Bartlett's Test of Sphericity ($\chi 2$=6173.936; p=.000) also suggested that the sample was factorable. The same analysis conducted as in the ATQ-30, using eigenone criterion and a loading of .50 or higher, suggested the extraction of three factors, which also explained 54% of the total variance. The first factor accounted for 20.056% of the variance while factor II and factor III accounted for 19.998% and 13.544, respectively. As expected, factor I and factor II represent the same factors extracted in the ATQ-30, "Low/Negative Self-Concept and Negative Expectations" and "Personal Maladjustment and Desire for Change" with some variance in the loadings of each item which made item 6 from the ATQ-30 "I don't think I can go on" to load on the second factor of the ATQ-R. Since this item seemed to reflect "personal mal-adjustment", we decided to keep it in this factor. Items "I wish I could just disappear" (item 19 on the ATQ-30 and 26 on the ATQ-R) and "There must be something wrong with me" (item 27 on the ATQ-30 and 36 on the ATQ-R), which were eliminated from the factors of the ATQ-30 because they did not contribute to a single factor, singularly loaded on the second factor of the ATQ-R. However, two items did not meet the criteria of a primary factor loading of .5 or above (item 30 and 14 of the ATQ-R) and one item (item 22 of the ATQ-R) cross-loaded on the two factors, consequently these items were eliminated from the factor structure. Items loadings on factor III are composed by the 10 positive items added in the ATQ-R, except for item 37 that did not meet the criteria of communality of at least .30, for which it was eliminated from the factor.

Following the same suggestion as previous authors on the studies of the ATQ-30, posterior analysis are made not only for the factors of the ATQ-R but also for the score of all the items, thus treating the scale as being represented by a single factor or by two dimensions composed by negative and positive self-statements.

Correlation between factors were explored, the total score of the ATQ-R was significantly and highly correlated with Factor I and II (r = .92; $p < .01$) and moderately negatively correlated with Factor III (r = -.67; $p < .01$; $p < .01$). Factor I and II were also highly correlated (r = .83; $p < .01$). Factor III was, as expected, also negatively correlated with both Factor I (r = -.48; $p < .01$) and Factor II (r = -.39; $p < .01$) with moderate magnitudes.

Table 2. Principal components analysis for the ATQ-R: items composing each factor and respective loadings, Chronbach's α for each factor as well as communalities for each item. *Note: Output criteria was selected in such a way that correlations <.5 were not considered.*

Factors	F_1	F_2	F_3	Communalities
Factor 1 - Low/Negative Self-Concept and Negative Expectations (α = .925)				
11. I'm so weak.	.63			.54
15. Nothing feels good anymore.	.60			.43
17. I can't stand this anymore.	.52			.51
18. I can't get started.	.62			.48
23. I hate myself.	.67			.64
25. I'm worthless.	.67			.64
29. I'm a loser.	.69			.57
31. I'm a failure.	.73			.64
33. I'll never make it	.55			.55
38. My future is bleak.	.64			.51
39. It's just not worth it.	.62			.59
40. I can't finish anything.	.69			.58
Factor 2 - Personal Maladjustment and Desire for Change (α = .927)				
1. I feel like I'm up against the world.		.60		.51
2. I'm no good.		.56		.56
4. Why can't I ever succeed?		.67		.48
5. No one understands me.		.72		.54
6. I've let people down.		.64		.45
8. I don't think I can go on.		.51		,53
9. I wish I were a better person.		.54		.45
12. My life is not going the way I want it to.		.55		.45
19. What's wrong with me?		.69		.66
21. I wish I were somewhere else.		.58		.41
26. I wish I could just disappear.		.56		.57
27. What's the matter with me?		.65		.62
34. I feel so helpless.		.62		.61
35. Something has to change.		.68		.52
36. There must be something wrong with me.	.53	.63		.67
Factor 3 – Positive Automatic Thoughts Positive Self-Statements (α = .889)				
3. I'm proud of myself.			.64	.45
7. I feel fine.			.74	.63
10. No matter what happens, I know I'll make it			.70	.53
13. I can accomplish anything.			.71	.52
16. I feel good.			.70	.56
20. I'm warm and comfortable.			.66	.51
24. I feel confident I can do anything I set			.61	.43

my mind to.				
28. I feel very happy.			.75	.65
32. This is super			.73	.57
Items that significantly load in more than one factor				
30. My life is a mess.	.49	.45	-.22	.49
14. I'm so disappointed in myself.	.49	.48	-.14	.49
22. I can't get things together.	.57	.54	-.14	.63
37. I'm luckier than most people.	.05	.01	.53	.28

Internal Consistency

An examination of the internal consistency yielded a coefficient alpha of .91 for the total score of the ATQ-30, composed by negative automatic thoughts (coefficient alphas for the factors found on the ATQ-30 are presented in table 1). For the total score of the ATQ-R the coefficient alpha found was .96. A coefficient alpha of .94 was found for the 10 positive automatic thoughts of the ATQ-R, however, one item was eliminated in our factor structure due to its low communality, yielding a new alpha value of .889. Alpha values for the other factors found on the ATQ-R are presented on table 2. These statistics suggest a high level of internal consistence.

In table 1, individual item-total score correlations for the ATQ-30 are presented as well as alpha values for the total ATQ-30 if an item were to be deleted. Individual item-total score correlations were in high range (r = .561 to .789). Moreover, results indicated that the deletion of any of these items would not increase the internal consistency of the scale. Concerning the ATQ-R, individual item-total score correlations, presented in Table 3, were in moderate to high range (r = .349 to .74) except for item 37 (.179). Although this item did not reveal an item-total correlation > .30, the item was not excluded from the total scale, because its elimination would not increase its internal consistency (Nunnally, 1978).

Table 3. Means, Standard Deviations and Individual Item-total Correlations for each Portuguese item of the ATQ-R (n = 245).

Item	M	SD	*r* Item-total	α if item deleted
1. I feel like I'm up against the world.	1.91	.896	.65	.96
2. I'm no good.	1.76	.929	.71	.96
3. I'm proud of myself.	2.89	1.12	.38	.96
4. Why can't I ever succeed?	2.59	1.15	.54	.96
5. No one understands me.	2.39	1.10	.55	.96
6. I've let people down.	2.28	1.02	.51	.96
7. I feel fine.	2.82	1.09	.56	.96
8. I don't think I can go on.	2.13	1.08	.69	.96
9. I wish I were a better person.	2.60	1.20	.59	.96
10. No matter what happens, I know I'll make it	2.86	1.12	.42	.96
11. I'm so weak.	1.78	.93	.67	.96
12. My life is not going the way I want it to.	2.60	1.22	.62	.96
13. I can accomplish anything.	3.31	1.03	.36	.96
14. I'm so disappointed in myself.	2.04	.98	.65	.96
15. Nothing feels good anymore.	1.56	.84	.55	.96
16. I feel good.	2.51	1.07	.52	.96
17. I can't stand this anymore.	1.94	1.06	.68	.96
18. I can't get started.	1.73	.92	.59	.96
19. What's wrong with me?	2.26	1.23	.73	.96
20. I'm warm and comfortable.	2.81	1.07	.48	.96
21. I wish I were somewhere else.	2.75	1.33	.54	.96
22. I can't get things together.	2.04	1.04	.74	.96
23. I hate myself.	1.53	.93	.74	.96
24. I feel confident I can do anything I set my mind to.	3.04	1.08	.35	.96
25. I'm worthless.	1.56	.86	.73	.96
26. I wish I could just disappear.	1.84	1.09	.72	.96
27. What's the matter with me?	2.22	1.19	.71	.96
28. I feel very happy.	2.68	1.07	.56	.96
29. I'm a loser.	1.66	.84	.64	.96
30. My life is a mess.	1.92	.93	.67	.96
31. I'm a failure.	1.53	.85	.68	.96
32. This is super	2.90	1.12	.47	.96
33. I'll never make it	1.88	.93	.68	.96
34. I feel so helpless.	1.93	.96	.71	.96
35. Something has to change.	2.70	1.20	.55	.96
36. There must be something wrong with me.	2.10	1.10	.74	.96
37. I'm luckier than most people.	3.87	1.16	.18	.96
38. My future is bleak.	1.58	.94	.63	.96
39. It's just not worth it.	1.75	.98	.70	.96
40. I can't finish anything.	1.69	.91	.66	.96

Descriptives

The means and standard deviations for the total sample and *t*-test differences between males and females are presented on Table 4. Gender differences were obtained for all measures. Girls have significantly higher results in depressogenic cognitions measured by ATQ-30 and ATQ-R totals, and in Factors I and II of the ATQ-R (reflecting *Low/Negative Self-Concept and Negative Expectations* and *Personal Maladjustment and Desire for Change,* respectively). On the third factor of the ATQ-R, which is composed by *Positive Automatic Thoughts,* girls have significantly lower means. Higher results were also found for girls in the measure of depression (CDI), as well as in the trait self-criticalness (FSCRS). On the other hand, boys have significantly higher means in the self-compassion measure (SELF-CS).

Table 4. Means and Standard Deviations for the Total Sample (n = 245) and t-test diferences between males (n = 157) and females (n = 88).

	Total (*n* = 245)		Males (*n* = 88)		Females (*n* = 157)			
Variables	M	SD	M	SD	M	SD	*t*	*p*
ATQ-30	60.26	21.42	54.99	19.16	63.22	22.09	2.93	.004
ATQ-R	89.98	25.6	81.08	22.90	94.96	25.83	4.20	.000
Factor 1	20.20	8.15	18.78	7.23	20.99	8.55	2.05	.042
Factor 2	34.07	12	30.69	10.97	35.96	12.16	3.36	.001
Factor 3	28.16	7.11	31.31	6.56	26.39	6.80	-5.50	.000
CDI	12.27	5.73	10.28	5.31	13.38	5.66	4.20	.000
S.Criticalness	17.25	10.55	14.34	9.58	18.89	10.74	3.30	.001
S.Compassion	18.70	3.01	19.40	2.59	18.29	3.16	-2.81	.005

ATQ-30: Automatic Thoughts Questionnaire; ATQ-R: Automatic Thoughts Questionnaire Revised; Factor I: *Low/Negative Self-Concept and Negative Expectations*; Factor II: *Personal Maladjustment and Desire for Change*; Factor III: *Postive Automatic Thoughts*; CDI: Children's Depression Inventory; S.Criticalness: Trait Self-Criticalness (FSCRS); S.Compassion: Self-Compassion Subscale (SELF-CS).

Convergent Validity

In order to explore the relationship between automatic depressive thoughts and other measures, Pearson correlations were conducted between all measures and the ATQ-R factors. As shown in table 5, automatic depressive thoughts (measured by the ATQ-30 and the ATQ-R) were highly and positively correlated with depression (CDI Total) ($r = .68$ and $r = .72$; $p < .01$), and highly and positively correlated with self-criticism measure (FSCRS) ($r = .71$ and $r = .68$; $p < .01$). Both Factors I and II, reflecting *Low/Negative Self-Concept and Negative Expectations* and *Personal Maladjustment and Desire for Change*, were highly positively correlated with depression (CDI) and the trait self-criticalness (FSCRS). Factor III measuring Positive Automatic Thoughts had a moderate positive correlation with self-compassion (SELF-CS).

Divergent Validity

The measure of self-compassion was included to address the discriminant validity of the ATQ-R. It was expected that performance on the ATQ-R would be negatively correlated with self-compassion. As seen in table 5, concerning the relationship between automatic depressive thoughts and the self-compassion measure (SELF-CS), results revealed that not only the total score of the ATQ-R but also the total score of ATQ-30, were found to be highly negatively correlated with this measure. *Low/Negative Self-Concept and Negative Expectations* (factor I) and *Personal Maladjustment and Desire for Change* (factor II) were also negatively correlated with self-compassion (SELF-CS) and *Positive Automatic Thoughts* (factor III) were found to be highly negatively correlated with depression (CDI) and negatively correlated with trait self-criticalness (FSCRS) in a low magnitude.

Table 5. Correlations (Pearson's *r*) between ATQ-R and its factors (*n* = 245).

	CDI	S.Criticalness	S. Compassion
ATQ-30	.68**	.72**	-.60**
ATQ-R	.73**	.68**	-.65**
Factor I	.64**	.66**	-.56**
Factor II	.66**	.72**	-.59**
Factor III	-.55**	-.29**	.49**

**$p < 0.01$

Temporal Stability

Four weeks later, 48 students (34 females and 14 male students) answered the ATQ-R questionnaire again. Temporal stability was calculated with Pearson's correlations both for the total scores of the ATQ-30 and the ATQ-R, and ATQ-R factors. These correlations revealed an acceptable temporal stability of the two instruments: ATQ-30 (r =.71, $p < 0.01$), ATQ-R (r =.79, $p < 0.01$) and Factor I (r =.69, $p < 0.01$), Factor II (r =.67, $p < 0.01$) and III (r =.71, $p < 0.01$) of the ATQ-R.

Discriminant Reliability

To measure the difference on the total scores of the ATQ-R between depressed and nondepressed adolescents, the CDI was used with the cut-off point of 19 to form two groups, which represent non-depressed and depressed adolescents. The depressed group was composed by 31 subjects (25 female students and 6 males). In order to prevent differences from gender and age and because comparing such a small group to the total sample of nondepressed subjects (n = 213) could bias the results, 31 adolescents scoring lower than 19 on the CDI were selected from the total

sample, with the same characteristics in gender and age as the previous group.

Differences between these two groups were tested regarding the total score of the ATQ-R and its factors, to see if differences in this scores for depressed and nondepressed groups were found. The ATQ-R (t = -7.488, p < .01; M = 130.03 vs M = 85.52), Factor 1 (t = -7.449, p < .01; M = 33.20 vs M = 18.45) and Factor 2 (t = -6.697, p < .01; M = 50.25 vs M = 32.06), successfully discriminated depressed from nondepressed subjects, with depressd subjects obtaining significantly higher scores in these measures than nondepressed. As expected, in factor III (composed by positive automatic thoughts), nondepressed subjects obtained a significantly higher score than depressed subjects (t = 5.346, p < .01; M = 28.42 vs M = 20.70). The same analysis was used for the total score of items composing the negative dimension of the ATQ-R (ATQR-negative), which also successfully differenciated these groups (t = -7.252, p < .01; M = 92.52 vs M = 56.13).

ATQ-R as a Predictor of Depressive Symptomatology

Since in literature the ATQ-R is commonly used as being composed by two subscales - total of negative items and total of positive items - a hierarchical multiple regression was computed to investigate if addition of the positive items of this questionnaire (ATQR-positive) to the total of the negative items of the ATQ-R (ATQR-negative), led to a significant increase in the variance accounted for when using a measure of depression (CDI) as a dependent variable.

Results suggested that addition of the score for the positive items to the model led to a significant increase in the ability to predict depression (ATQR-negative (step 1), R^2 = .460, F(1,243)=208.912, p <.001; (step 2), R^2 = .536, F(2, 242) = 139.936, p < .001).

As differences in gender were found significant in these measures, the same analysis was computed controlling for gender. Gender accounted for 6.8% of variability in the dependent variable (CDI). When negative items of the ATQ-R were added to the model in step 2, the model accounted for 48% of the variance and when adding the positive items composing factor III, the percentage of variability accounted for went significantly up from 48% to 54%. Thus, by controlling gender, results indicate that the ATQR-negative items predict depression and addition of the score for positive/nonnegative items leads to a significant increase in the prediction of depression (CDI).

Table 6: Model Summary of the three-steps hierarchical multiple regression

Predictors	R	R^2	F	Beta	*p*
Model 1:	.260	.068	17.661		.000
Gender				-.260	
Model 2:	.694	.481	112.172		.000
Gender				-.139	
ATQR-negative				.654	
Model 3:	.732	.537	93.001		.000
Gender				-.061	
ATQR-negative				.550	
ATQR-positive				.275	

ATQR-negative: negative items; ATQR-positive: positive/nonnegative items

V - Discussion

The present study aimed to evaluate the psychometric properties of the ATQ-R, an instrument that measures the frequency of automatic thoughts associated with depression, in Portugal among adolescents, as well as some of the psychometric properties of the original version of this questionnaire, the ATQ-30, which is only composed by negative automatic thoughts. Although it was not the main aim of this study, we decided to study some properties of the ATQ-30, since there is a higher amount of psychometric studies of this measure and because this questionnaire had never been evaluated in Portugal or with a population of adolescents. For the validation of the ATQ-R and the ATQ-30 for the Portuguese population, we used a sample of 250 students aged from 14 to 18 in order to analyse if performance of the scale in a sample of adolescents paralleled findings in adults and children. The same sample was used to analyse some of the psychometric properties of the ATQ-30. Additionally, the association between cognitions measured by the ATQ-R and depressive symptomatology was also explored.

A Principal Components Analysis was performed to examine the factor structure of the scales. We used the same procedures as in the development of the original ATQ (ATQ-30; Hollon & Kendal, 1980) not only for the ATQ-30 but also for the ATQ-R, since only the ATQ-30's factor structure was examined in previous studies. In the current study, the ATQ-30 presented a two-factor solution, reflecting "*Low/Negative Self-Concept and Negative Expectations"* (15 items) and "*Personal Maladjustment and Desire for Change"* (12 items). Analysis of the ATQ-R revealed a three factor solutions: factor I and factor II representing the same factors extracted in the ATQ-30 - "*Low/Negative Self-Concept and Negative Expectations"* (12 items) and "*Personal Maladjustment and Desire for Change"* (15 items), and factor III composed by "*Positive Automatic Thoughts*" (9 items). This analysis revealed that items composing factor I and II (factors relating to negative automatic thoughts) of the ATQ-R are not exactly the same as the ones composing the same factors on the ATQ-30. Three items were eliminated from the ATQ-R factor structure concerning negative automatic

thoughts: items 30 and 14 (which did not meet the criteria of a factor loading of .5 or above) and item 22 (which cross-loaded on the two factors). Additionally, on the ten nonnegative items composing factor III of the ATQ-R, item 37 did not meet the criteria of communality of at least .30 and it was also eliminated from the factor. Previous studies using factor analysis on the ATQ-30 have been inconsistent in the factor structures found (Netemeyer et al., 2001). However, similarly to our results, studies in nonclinical samples have also reported two-factor solutions (Joseph, 1994, Chioqueta & Stiles, 2006). Also, no factor solutions have been reported (Kazdin, 1990; Netemeyer et al., 2002). To our knowledge, no studies have analyzed the factor structure of the ATQ-R and this instrument is mainly used for its total score and for its two dimensions: negative and positive automatic thoughts. Future studies should verify the factor structure of the Portuguese version of ATQ-R and perform factor analysis in clinical samples as well as confirmatory factor analysis. Correlations between factors of the ATQ-R were also explored. The total score of the ATQ-R was, as expected, significantly and highly correlated with *"Low/Negative Self-Concept and Negative Expectations"* and "*Personal Maladjustment and Desire for Change"*; and moderately negatively correlated with *"Positive Automatic Thoughts"*. The fact that *"Low/Negative Self-Concept and Negative Expectations"* and "*Personal Maladjustment and Desire for Change"* were also highly intercorrelated, seems to be in accordance with previous studies where although more than one factor was found for the negative self-statements of the ATQ-30, the authors supported that a single substantive factor likely underlies the 30 negative items (Netemeyer et. al, 2001), indicating that investigation is needed to see if these two factors measure the same construct. *"Positive Automatic Thoughts"* was, as expected, negatively correlated with both these factors.

The present study's analysis also demonstrated that both the ATQ-30 and ATQ-R reveal high internal consistency as evident in high coefficients of reliability (between .89 and .96), confirming the results found by previous authors (Hollon & Kendall, 1980; Kendall et al., 1989; Burgess & Haaga, 1994; Renk et al., 2010; Brinthaupt et al., 2011; Kodama et al., 1994). Also, moderate to high item-total correlations were observed. In the ATQ-R, only one item didn't reveal an item-total correlation > .30. However, no item was eliminated from the total scale of ATQ-R, because their elimination would not increase the scale's internal consistency, confirming the items' adequacy to the construct this measure intends to assess. In addition, the temporal reliability analysis proved that both the ATQ-30 and the ATQ-R, not only their total scores but also their factors, are stable over time.

Differences between genders and group-ages related to cognitive depressogenic measures (for the total scores of the ATQ-30 and the ATQ-R, and for factors of the ATQ-R) were analyzed, as well as for the other measures (CDI, Trait Self-Criticalness and Self-Compassion) used in this study. Concerning gender differences, girls had significantly higher results in the frequency of depressogenic cognitions (ATQ-30 and ATQ-R total scores), as well as in dimensions referring to *Negative Self-Concept and*

Negative Expectations (factor I) and *Personal Maladjustment and Desire for Change* (factor II) and lower frequency of *Positive Automatic Thoughts* (factor III). Hollon and Kendall (1980), in their original work, did not find any gender differences regarding ATQ-30 scores and Kendall et al. (1989) did not measure the difference of ATQ-R scores between genders. However, other studies have confirmed that girls are found to be more prone to have negative automatic thoughts (Dobson & Breiter, 1983; Erden-Dmamoglu, 2013; Roberts & Kassel, 1996) and less positive automatic thoughts (Hogendoorn et al., 2010). These apparent gender differences in depressogenic thoughts might have been mediated by depressive symptomatology, as females are more likely than men to report depression (Bryant & Baxter, 1997). In fact, girls also present significantly higher results in the measure of depression (CDI), in the trait self-criticalness (FSCRS) and lower self-compassion (SELF-CS). All these findings seem to be consistent with differences in the level of depression between the two genders in adolescence, where girls are more likely than boys to report depressive symptoms in both population-based and clinical samples (Cyranowski, Frank, Young, & Shear, 2000; Hankin et al., 1998; Zahn-Waxler, Crick, Shirtcliff, & Woods, 2006; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Girgus, 1994, Cohen et al., 1993; Essau et aI., 2000; Petersen et aI., 1991; Weissman et al., 1996).

Moreover, in this study, the ATQ-30, the ATQ-R and its factors ensure good convergent and divergent reliabilities. Automatic depressive thoughts measured by the total of the ATQ-30 and of the ATQ-R and ATQ-R factors yield significant correlations with depression (CDI) and trait self-criticalness (FSCRS), providing evidence for convergent validity. The same measures of depressogenic thoughts correlated negatively with self-compassion (SELFCS), where a significant negative correlation was found. The magnitudes of the correlations between the depressogenic cognitions and the other measures were high (.63 to .71). Thus, in the same way as previous studies (Dobson & Breiter, 1983; Ghassemzadeh, Mojtabai, Karamghadiri & Ebrahimkhani, 2006, Hollon & Kendall, 1980, Burgess & Haaga, 1994, McGillivray & McCabe, 2005) both convergent and discriminant validity were proved. Future research is needed to examine the relation of these questionnaires to a broader range of assessment modalities. Also, high correlations found between the ATQ-30 and the ATQ-R with self-criticism might indicate that these measures evaluate similar constructs and further studies should investigate the overlapping features of these measures.

Furthermore, the present study provides evidence for the differences in the frequency of depressive thoughts between nondepressed adolescents and potentially depressed adolescents. Adolescents who were assigned to the potentially depressed group having in count the CDI cut-off points, evinced significantly higher scores on the total of the ATQ-R and its factors, than adolescents from comparison group. Therefore, the ATQ-R and its factors seem to successfully discriminate the adolescents who scored higher in a measure of depression (CDI) from adolescents considered nondepressed.

The subscale of the negative items of the ATQ-R (ATQR-negative), including all negative items from this measure, was also tested to see if it would discriminate this groups and, in accordance with literature, individuals with higher scores in the CDI presented significantly more negative automatic thoughts than control group (e.g., Nelson & Craighead, 1977; Hollon & Kendal, 1980; Harrel & Ryon, 1983; Kendall, Howard & Hays, 1989).

Since the ATQ-R is used by some authors by recurring to its two subscales (negative automatic thoughts and positive automatic thoughts), the relation between depressogenic cognitions measured by the ATQ-R and depressive symptoms was studied having in count the contribution of these dimensions separately. We analyzed the contribution of the positive dimension (ATQR-positive) in predicting depressive symptomatology, when adding this subscale to the subscale of negative automatic thoughts (ATQR-negative). As found by Kendal et al. (1989), adding the score of positive/nonnegative self-statements to the score of negative automatic thoughts, evidenced increased predictiveness of depression, supporting that depressive mood is linked not only to the presence of negative automatic thoughts but also to the absence of positive markers. Nonetheless, both ATQ-R positive and negative dimensions seem to be significantly related to depression (as noticed before in the correlation between this measure and the CDI) and able to predict depressive symptoms. In fact, there is increasing evidence that negative cognitions predict depressive symptoms in both children (e.g., Hilsman & Garber, 1995; Nolen-Hoeksema, Girgus, & Seligman, 1992) and adults (Metalsky & Joiner, 1992; Metalsky, Joiner, Hardin, & Abramson, 1993). As Moore and Garland (2003) stated, negative automatic thoughts are essential to depression, in the way that they help to maintain the depressed humor in individuals. As original authors suggested (Kendall et al., 1989), it would be important for future studies to verify if including a positive dimension in a revised ATQ is specially helpful in identifying depression separate from anxiety disorders, since anxious mood is related to negative affect but unrelated to positive affect (Burgess & Haaga, 1994; Jolly & Wiesner, 1996; Watson & Clark, 1984; Watson, Clark, & Carey, 1988; Watson & Tellegen, 1985).

Overall, the results of the present study suggest that the ATQ-R can be completed by adolescents and has good psychometric characteristics, relating to negative depressogenic concepts among adolescents in a fashion that parallels findings with depressed adults and children. Moreover, this instrument was able to relate to depressive symptoms in a nonclinical sample, which might indicate its potential in identifying not only the thoughts of depressed adolescents but also subclinical levels of depression in adolescents in risk.

These results ought to be interpreted on the light of some limitations. Firstly, the sample was mainly composed of females, which suggests caution in the interpretation of the results. We recommend further examination of the findings by eventually employing bigger samples of both genders. It might be that the ATQ-30 ATQ-R would demonstrate different psychometric

properties when administered to psychiatric adolescent patients rather than our nonclinical students sample (Holllon et al., 1986; Harrel & Ryon, 1983). However, numerous studies have also used nonclinical populations in the study of the ATQ-30 and the ATQ-R (Calvete & Connor-Smith, 2005). Furthermore, although the present study suggests that the items of the ATQ-R designed for adults may characterize the cognitions of depressed adolescents as well as it characterized the ones of children (Kazdin, 1990), it is possible that there are different automatic thoughts that better characterize depressed adolescents. Finally, it currently remains to be demonstrated whether the ATQ-R is sensitive to changes in the nature and frequency of cognitions that result from experimental manipulation and/or psychotherapeutic interventions.

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