The Role of Worry and Rumination in the Symptoms of Anxiety and Depression

Adviye Esin YILMAZ

SUMMARY

Aim: The aim of this study is to examine the unique and interactive role of worry and rumination in anxiety and depression symptoms.

Method: A total of 328 university students responded to questionnaires assessing worry (Penn State Worry Questionnaire), rumination (Ruminative Response Scale-Short Version), anxiety (Beck Anxiety Inventory and Trait Anxiety Inventory), and depression (Beck Depression Inventory).

Results: The results of regression analyses demonstrated that the relationship between worry and depressive symptoms is significant only if individuals engage in high levels of brooding type rumination. The main effect of worry was a significant predictor of trait anxiety, but it did not make a significant contribution to somatic anxiety. Brooding was found to be associated not only with depressive symptoms but also with both types of anxiety. Finally, the reflection type of rumination did not significantly predict depressive symptoms, somatic anxiety, or trait anxiety.

Conclusion: Findings indicated that worry and rumination are related to both anxiety and depression. Clinical implications of these results were discussed in the light of the current literature.

Keywords: Worry, rumination, anxiety, depression

INTRODUCTION

Negative, repetitive and relatively uncontrollable intrusive thoughts have started to be investigated for better understanding of the development and maintenance processes of psychopathologies. While worry, one of these thought patterns, becomes prominent in the investigations about anxiety disorders; rumination, another intrusive thought pattern is investigated with regard to depressive disorders. This distinction prevails despite the high comorbidity rates, reaching as high as a 60% lifetime prevalence rate (Mineka et al. 1998), observed between unipolar depression and anxiety disorders (Fresco et al. 2002). Research reveals that worry and rumination are frequently also observed in the normal population (i.e., Dupuy et al. 2001, Holaway et al. 2006, Papageorgiou 2006) and 80% to 99% of individuals in nonclinical samples experienced intrusive thought patterns (Freestone et al. 1991). Therefore, worry and rumination are being investigated intensively on nonclinical groups which are acknowledged as analysis units analogous to clinical groups. This study, entreating the relation of worry and rumination, to the symptoms of both anxiety and depression, focuses on a nonclinical group.

With its frequent classical definition, worry represents “an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes” (Borkovec et al. 1983, p. 10). To state the definition in another fashion, worry is a cognitive activity which accompanies to the anxiety about events with unclear outcomes, but which are believed to culminate adversely (MacLeod et al. 1991). In this regard, worry may be
Acknowledged as anxious apprehension or a dysfunctional endeavour to cope with chronic anxiety regarding future events (Barlow, 2002). When it is at an excessive level, it may disrupt the ability of differentiation between what is dangerous and what is not, since it raises sensitivity to the clues about threats (Mathews 1990). Chronic, excessive and generalised worry, perceived as uncontrollable, is diagnostically acknowledged as the basic cognitive feature of generalized anxiety disorder (GAD) (American Psychological Association 2013), and frequently assessed by the Penn State Worry Questionnaire (PSWQ; Meyer et al. 1990). On the other hand, worry, which emerges with anxiety due to its nature, is not only incident to GAD, but it is a cognitive activity observed to a certain extent in many anxiety disorders such as panic disorder (PD), social anxiety disorder (SAD), specific phobia (SP) and in obsessive-compulsive disorder (OCD) (Brown et al. 1992).

Rumination, on the other hand, is a mental activity with no consensus on its definition since it is discussed in various contexts by various theories (Smith & Alloy 2009). In the broadest sense, it can be defined as a general structure indicating all patterns of thought occurring with a repetitive nature (Martin & Tesser 1989). According to the response-styles theory (Nolen-Hoeksema 1991, 2004), which is a leading and widely supported theory in the relevant literature, rumination emerges as a response to the negative emotions experienced during depressive mood and is defined as “repetitively focusing on the fact that one is depressed; on one’s symptoms of depression; and on the causes, meanings, and consequences of depressive symptoms” (Nolen-Hoeksema 1991, p. 569). Considered as such, rumination is acknowledged as a basic cognitive feature pertaining to dysphoria and major depressive disorder (MDD) (Nolen-Hoeksema 1991, 2004, Papageorgiou & Wells 2001a, 2004). The depressive rumination mentioned in this theory is being assessed using the Rumination Responses Scale (RRS; Nolen-Hoeksema & Morrow 1991). A short version of this tool has been devised and two sub-types of depressive rumination have been classified as brooding and reflection (Treytor et al. 2003). Associated with feeling sad, brooding is indicative of comparing oneself with other people and criticisms of self and others, while reflection includes thoughts on the order of trying to find what could be done to cope with problems and difficulties (Treytor et al. 2003). While research points at the relation of depressive rumination to the severity of depressive symptoms, it also shows that it may prolong the depressive mood state (Lyubomirsky et al. 1998, Moberly & Watkins 2008, Nolen-Hoeksema & Morrow 1993, Nolen-Hoeksema et al. 1994).

Worry and rumination, which have been conceptualised as different cognitive processes that play a role in the aetiology of various psychological disorders, in fact, have conceptual similarities such as involving repetitive and negative thought chains (Goring & Papageorgiou 2008, Nolen-Hoeksema 1991), being extreme in comparison with contextual and environmental demands (Mathews 1990, Watkins 2008) and being available for use as a coping mechanism via undertaking a perceived adaptive function (Borkovec & Roemer 1995, Lyubomirsky & Nolen-Hoeksema 1993, Papageorgiou & Wells 2001b). On the other hand, when thought in terms of content, time orientation and problem solving capacities, worry and rumination seem, also, to have unique differenting features. While worry involves a future-oriented focus against an anticipated threat (Borkovec et al. 1983, Watkins et al. 2005), rumination revolves around past-oriented loss themes (Beck 1976, Nolen-Hoeksema et al. 2008). Papageorgiou and Wells (1999) showed that a ruminative thought pattern bears less verbal content, compared to thoughts with worry content, and it is related to being less self-confident and exerting less effort for problem-solving.

Based on these common and distinct features, recent studies emphasising that these two thought patterns are transitive between anxiety and depression have attracted attention. Current research presents empirical evidence showing that worry also occurs in depression (Chelminski & Zimmerman 2003, Goring & Papageorgiou 2008, Molina & Borkovec 1994, Molina et al. 1998, Starcevic 1995) and rumination plays a role in increasing anxiety (Blagden & Craske 1996, Nolen-Hoeksema 2000, Nolen-Hoeksema et al. 2008). For instance, Starcevic (1995) compared pure GAD cases and pure MDD cases in terms of worry levels and found that worry was equivalent in both groups with regard to frequency and intensity; and concluded that worry did not pertain to only GAD. Similarly, in a longitudinal study, Nolen-Hoeksema (2000) asserted that the rumination level measured in the first assessment time was a powerful predictor of the changes occurring in anxiety symptoms.

These findings indicate that the claim that worry is only related to anxiety and rumination only to depression should be systematically inquired. In accordance with this purpose, studies have started to be conducted for discussing the common link between worry and rumination and the symptoms of anxiety and depression, and for scrutinising the overlapping and distinctive features of worry and rumination in both contexts of anxiety and depression. In these yet limited studies, a significant intercorrelation between worry and rumination was shown, using both nonclinical groups (Fresco et al. 2002, Hong 2007, Muris et al. 2004, Segerstrom et al. 2000, Watkins 2004) and clinical groups (de Jong-Meyer et al. 2009, McEvoy et al. 2013, Segerstrom et al. 2000). As an expected outcome of this association, it was also found that worry and rumination failed to differentially relate to anxiety and depression. For instance, in the first study on this topic, Segerstrom et al. (2000) showed, using the structural equation modeling, that worry and rumination were loaded on a
single latent variable called the “repetitive thought” and the worry component was related to both anxiety and depression after excluding rumination items, and the rumination component was related to both anxiety and depression after excluding worry items. Fresco et al. (2002), in their study on university students, found that PSWQ and RRS items, subjected to factor analysis together, derived separate factors as worry and rumination; however, these structures are equally related to both anxiety and depression symptoms. In one recent study, McEvoy et al (2013) did not report a significant difference between clinical groups (MDD, GAD, SAD, PD) with and without a comorbid Axis 1 disorder, in terms of worry and rumination levels. On the other hand, there are findings demonstrating that worry and rumination exhibit more differentiated relationship patterns with depression and anxiety symptoms. For instance, Muris et al (2004) presented that worry and rumination showed a more powerful association with anxiety in comparison to depression, and rumination lost its power to predict depressive symptoms when worry had been controlled. Hong (2007) showed, on Singaporean students, that while worry was associated with anxiety and depression symptoms both cross-sectionally and longitudinally, rumination was cross-sectionally associated only with depressive symptoms.

In these limited number of studies, in which worry, rumination and psychological symptoms were investigated together and yielded different results, it attracts scrutiny that, as of yet, the interaction effect of worry and rumination on anxiety and depression has not been investigated; different types of anxiety and rumination have not been considered; and the comorbidity between anxiety and depression was not eliminated. In addition to these, a study which investigates the relationship patterns of worry and rumination with anxiety and depression symptoms in a single research design could not be found in Turkey. In the light of these evaluations, this study aims at examining the unique and interactional role of worry and rumination (brooding and reflection) in anxiety (symptoms experienced in the last week and trait anxiety) and depression symptoms, after controlling for the comorbidity between the symptoms of anxiety and depression. Thus, the study will seek answers to the following research questions: (1) whether worry is related only to anxiety symptoms and rumination to depression symptoms, and (2) whether worry and rumination have an interactive role in explaining anxiety and depression symptoms.

**METHOD**

**Participants**

A total of 328 students, including 163 female (50.5%) and 160 male (49.5%) (5 participants did not indicate their sex), from various departments in the Faculties of Engineering, Science and Letters of Dokuz Eylul University participated in the study. The age range of the participants ranged between 17 and 35 (X = 21.66, SD = 2.09).

**Instruments**

*Penn State Worry Questionnaire (PSWQ):* PSWQ (Meyer et al. 1990) is a five-point Likert type scale comprising of 16 items such as “My worries overwhelm me.”, “Once I start worrying, I cannot stop.” and “I worry all the time.” which assesses the frequency, intensity and controllability of generalised and trait worry which does not pertain to any specific topic. The original version of the PWSQ is a single factor instrument and scores varying between 16 and 80 are obtained by summing up all of the items. The increase in the total score indicates an increase at the pathological worry level. PSWQ was adapted to Turkish by Yilmaz et al (2008). The psychometric analyses conducted on a sample comprising of university students and adults indicated that Turkish PSWQ exhibited a single factor structure as compatible with the original version. In the internal consistency analysis of the questionnaire, the corrected item-total correlations varied between 0.32 and 0.75. Both the Cronbach's alpha and the split-half reliability coefficients of the questionnaire were 0.91 and the test-retest reliability coefficient was 0.88. The significant correlations between the scores obtained from the PSWQ and metacognitions (r = 0.58), obsessive-compulsive symptoms (r = 0.49), trait worry (r = 0.67), anxiety symptoms (r = 0.43) and depression symptoms (r = 0.46) supported the convergent validity of the questionnaire.

*Ruminative Responses Scale, Short Form (RRS-SF):* RRS-SF is a four-point Likert type scale comprising of 10 items which assess to what extent the individuals use a ruminative coping style (Treynor et al. 2003). It was constructed by removing the items which had been criticised for overlapping with depressive symptoms in the long version of the scale comprising of 21 items (Nolen-Hoeksema & Morrow 1991). The scale has two sub-dimensions; “brooding” which involves a passive comparison of unsatisfied expectations and the current situation (for instance, “Think about a recent situation, wishing it had gone better”) and “reflection” involving cognitive endeavours for coping with problems and difficulties (for instance, “Analyze recent events to try to understand why you are depressed”). The original RRS-SF was found to be highly correlated (r = 0.90) with the long version of the scale, and the internal consistency coefficients for total RRS-SF, reflection and brooding were reported as 0.85, 0.72, and 0.77 respectively.

The portion of the study evaluating the psychometric properties of Turkish RRS-SF which was conducted on university students revealed that the short version of the RSS had a factor structure similar to the original version, total scale and subscales had acceptable levels of reliability (internal reliability
coefficient was 0.85 for the total scale, 0.77 for reflection and 0.75 for brooding), and good levels of validity (with BDI $r = 0.60$ for the total scale; $r = 0.59$ for brooding, and $r = 0.50$ for reflection) (Erdur-Baker & Bugay 2012).

Beck Anxiety Inventory (BAI): This inventory assesses the severity of the panic-like cognitive and somatic anxiety symptoms which have occurred in the last week in an arousal focused form (Beck et al. 1988). It comprises of 21 items which are evaluated between 0 and 3, thus the score that can be obtained from the inventory varies between 0 and 63. The Turkish adaptation of the inventory was conducted by Hisli (1988, 1989) and it was shown that BAI was a sufficiently valid and reliable instrument.

State-Trait Anxiety Inventory, Trait-Anxiety Form (STAI-T): STAI-T (Spielberger et al. 1983) comprises of 20 items which assess proneness to anxiety. Individuals evaluate themselves with regard to how do they feel themselves in general on a four-point Likert type scale. The total score to be obtained ranges between 20 and 80, and higher scores indicate an increase in trait anxiety. The inventory was reported to have high reliability varying between 0.86 and 0.95 for the adult, university and high school samples (Spielberger et al. 1983). The convergent validity of the inventory was reported on normal and anxiety disorder samples using other inventories assessing anxiety (Bieling et al. 1998).

STAI-T was adapted into Turkish by Öner and Lecompte (1985). Similar to the original version, the internal consistency coefficient was reported between 0.83 and 0.87, and the test-retest reliability over a year period ranged from 0.71 to 0.86, on five different university student samples. Supporting the validity of the inventory, it was found that the scores obtained from a psychiatric group were significantly higher than the normal comparison group, and it had a positive correlation with similar anxiety inventories.

Beck Depression Inventory (BDI): BDI is a 21 item inventory devised for assessing the severity of depressive symptoms (Beck et al. 1979). The score for each item varies between 0 and 3, and the total score to be obtained is between 0 and 63. The adaptation of the inventory into Turkish was conducted by Hisli (1988, 1989) and it was shown that the psychometric properties of the Turkish version were satisfactory.

Procedure

The data collection procedure was conducted as group sessions in class hours. Before the administration of questionnaires, the voluntary participants were informed about the study and their consent was obtained. In order to eliminate sequencing and carry over effects, the inventories were applied to the participants in a randomized order. The total administration time was approximately 30 minutes.

Statistical Analyses

Before the main analyses, the differences between females and males in terms of the study variables were examined using one-way analysis of variance (ANOVA). Three different hierarchical multiple regression analyses as offered by Aiken and West (1991) were conducted to investigate the individual role of worry and rumination, and the effect of interaction between these two in predicting symptoms of anxiety and depression. In the first step of the analyses, where the two types of anxiety symptoms (BAI and STAI-T) or depressive symptoms (BDI) were the dependent variable, the other symptom dimension, apart from sex, was controlled. Thus, the comorbidity between anxiety and depression was statistically eliminated, and it was ensured that the independent variables would predict pure depression or pure anxiety symptoms. Worry and dimensions of rumination (brooding and reflection) were included into the analysis as independent variables in the second step, and the two-way interactions terms, formed by the multiplying together worry and each of the rumination dimensions, were added in the regression equation in the third step as a block. All continuous variables including control variables were centered using mean scores, and the interaction terms of worry and rumination dimensions were calculated using these mean-centered variables.

RESULTS

Descriptive statistics

The ANOVA findings which compared the female and male participants show that females reported significantly higher levels of worry ($X_{female} = 47.45, X_{male} = 43.91, F_{1,322} = 5.69, p < .05$), brooding ($X_{female} = 12.17, X_{male} = 11.09, F_{1,322} = 8.62, p < .005$), reflection ($X_{female} = 11.54, X_{male} = 10.69, F_{1,322} = 5.26, p < .05$) and anxiety symptoms ($X_{female} = 21.66, X_{male} = 17.33, F_{1,322} = 8.25, p < .005$). With reference to the level of depressive symptoms and trait-anxiety, any significant difference between females and males could not be observed. With regard to the existence of main variables where significant difference had been observed, the effect of sex was controlled in all main analyses.

The association of worry and rumination with the symptoms of anxiety and depression

The findings of the hierarchical regression analyses, which was conducted to investigate the role that worry and rumination levels played in explaining the symptoms of anxiety and depression are summarised in Table 1. In the analysis, where the anxiety symptoms experienced in the last week (BAI) were predicted, it was seen that only the main effect of brooding type rumination ($\beta = 0.31, p < .001$) was significant in the second step, after controlling for the variance explained by
comorbid depressive symptoms and sex. The two-way interaction terms, added into the equation in the third step, were not significant in predicting anxiety symptoms. In the analysis, where trait-anxiety (STAI-T) was used as the dependent variable, the first step control variables, depressive symptoms and sex, significantly predicted trait-anxiety symptoms as well. In the following step, the main effects of worry ($\beta = 0.43, p < .001$) and brooding ($\beta = 0.18, p < .001$) were also significant. However, interaction effects of worry and any type of rumination were not significant predictors of trait-anxiety level (Table 1).

In the analysis, where the depressive symptoms were predicted, it was seen that the main effects of worry ($\beta = 0.23, p < .001$) and brooding ($\beta = 0.37, p < .001$) were significant in the second step, after controlling for the variance explained by comorbid anxiety symptoms as assessed via BAI and sex. It was observed that only the interaction effect between worry and brooding ($\beta = 0.23, p < .001$) had a significant predictive power among the other two-way interaction terms, which were entered into the equation in the third step (Table 1).

In order to examine the pattern of this significant interaction, the procedure proposed by Aiken and West (1991) was employed. Accordingly, the simple regression equations of the depression variable were calculated for groups with a standard deviation above and below the worry and rumination means (low rumination/worry, high rumination/worry groups), the significance of these simple regression slopes were examined using post-hoc regression analyses performed for each slope representing the high and low levels, and the obtained values were plotted.

As it can be seen in Figure 1, the effect of worry on depressive symptoms varies with regard to the level of brooding. The simple regression slope is not significant for individuals with a low level of brooding ($\beta = 0.07, t_{324} = 1.02, p = .31$). Put differently, the level of worry does not have an effect on depressive symptoms for individuals with low levels of brooding. However, the regression slope is significant for individuals with high levels of brooding ($\beta = 0.42, t_{324} = 7.01, p < .001$). In other words, if individuals with high levels of worry have a low level of worry, the severity of the depressive symptoms are also low; on the other hand, individuals with both high levels of brooding and high levels of worry present depressive symptoms in the highest level.

### DISCUSSION

This study investigated not only the main effects of worry and two types of rumination, but also their interactions with regard to two types of anxiety and depression symptoms, on a non-clinical university sample. Taking into consideration the comorbid anxiety and depression table, depressive symptoms in anxiety related analyses, and anxiety symptoms in depression related analyses were controlled. First, the difference between the sex groups with regard to worry and rumination levels were examined and it was found that females experienced worry and rumination more, when compared to males, consistent with findings obtained from nonclinical samples (for instance, Dugas et al. 2001, Meyer et al. 1990, Nolen-Hoeksema & Jackson 2001) and with Turkish adaptation studies of the worry and rumination instruments (Yilmaz et al. 2008, Erdur-Baker & Bugay 2012). Therefore, the effect of sex was controlled while investigating the research questions.

The examinations aimed to answer if worry is related only to anxiety symptoms and rumination to depression symptoms, after controlling for sex and the comorbidity of anxiety-depression, thus showing that worry does not only significantly

### Table 1. Prediction of anxiety and depression symptoms from the levels of worry and rumination.

<table>
<thead>
<tr>
<th></th>
<th>Anxiety Symptoms (BAI)</th>
<th>Trait Anxiety (STAI-T)</th>
<th>Depressive Symptoms (BDI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$t$</td>
<td>$F$</td>
</tr>
<tr>
<td>Step 1: Control variables</td>
<td>72.88***</td>
<td>0.31</td>
<td>72.88***</td>
</tr>
<tr>
<td>Other symptom dimension</td>
<td>0.54</td>
<td>11.58***</td>
<td>0.71</td>
</tr>
<tr>
<td>Sex (M = 0, F = 1)</td>
<td>0.15</td>
<td>3.21**</td>
<td>0.09</td>
</tr>
<tr>
<td>Step 2: Main effects</td>
<td>44.02***</td>
<td>0.10</td>
<td>155.78**</td>
</tr>
<tr>
<td>Worry</td>
<td>0.07</td>
<td>1.22</td>
<td>0.43</td>
</tr>
<tr>
<td>Brooding</td>
<td>0.31</td>
<td>4.41***</td>
<td>0.18</td>
</tr>
<tr>
<td>Reflection</td>
<td>0.09</td>
<td>1.53</td>
<td>0.04</td>
</tr>
<tr>
<td>Step 3: Interaction effects</td>
<td>31.42***</td>
<td>0.00</td>
<td>112.20**</td>
</tr>
<tr>
<td>Worry x Brooding</td>
<td>-0.03</td>
<td>-0.41</td>
<td>-0.08</td>
</tr>
<tr>
<td>Worry x Reflection</td>
<td>0.05</td>
<td>0.82</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note. BAI = Beck Anxiety Inventory, STAI-T = State-Trait Anxiety Inventory, Trait-Anxiety Form, BDI = Beck Depression Inventory. *$p < .05$, **$p < .005$, ***$p < .001$
explain trait-anxiety but also the depressive symptoms. With regard to rumination, the increase in the level of brooding explains the increase in depressive symptoms and the increase in both the somatic anxiety symptoms and trait-anxiety characteristics. When the findings are evaluated all together, it is seen that worry is not only peculiar to anxiety and rumination to depression, even after controlling for the comorbidity of anxiety and depression, supporting studies, albeit limited in number, conducted with non-clinical samples (Fresco et al. 2002, Segerstrom et al. 2000, Watkins 2004) and clinical samples (McEvoy et al. 2013, Segerstrom et al. 2000). Independently of the overlap between the symptoms, the presence of worry and rumination in both anxiety and depression can be explained by the view that a repetitive intrusive thought pattern is the common characteristic of worry and rumination (Segerstrom et al. 2000, McEvoy et al. 2013). Accordingly, it is thought that a covert structure such as repetitive thought disposition could be a larger determining factor on emotional symptoms rather than the process of thought itself. This proposition, which has been supported by a limited number of studies as yet, should be investigated with appropriate analysis methods in studies to be conducted in Turkey. The situation that worry and rumination do not pertain to a particular symptom dimension, can be understood as it would be more appropriate to adopt a content-specific approach in order to make such a distinction. For instance, even though worry is seen to be related to both anxiety and depression, it was found that there were differences between anxiety and depressive disorders in terms of worry contents (Papageorgiou 2006, Wells & Morrison 1994, Wells & Papageorgiou 1998). On the other hand, even if worries are massively future-oriented, there are studies showing that some worries could be related to a past event, just as some ruminations involve worry (Molina et al. 1998). At this point, instead of the differences in levels, in future studies it could be investigated whether ruminations observed in anxiety and worries observed in depression are gathered under more specific topics with regard to their content.

Examinations aimed at answering the other research question that whether worry and rumination have an interactive role in explaining the anxiety and depression symptoms, show that such an interaction is observed only between worry and brooding, and with regard to explaining depressive symptoms. This finding supports the studies in the literature asserting that worry does not pertain only to anxiety (e.g., Chelminski & Zimmerman 2003, Molina & Borkovec 1994) and presents an empirical support for the idea that the association of worry with depressive symptoms do not originate from the possible depression-anxiety comorbidity. On the other hand, this finding indicates that worry attains significance with regard to depressive symptoms only together with brooding. When it is considered that worry is a future-oriented and brooding is a past-oriented cognition, it can be argued that trait preoccupation with negative experiences would strengthen the beliefs that future experiences would also be negative. Therefore, when brooding combines with worry, it reinforces the expectation that past negative experiences would be repeated in the future, and thus it seems to cause an increase in the severity of depressive symptomatology. In a supporting fashion, Nolen-Hoeksema (1991) argues that ruminations may involve worries about whether to cope with current depressive symptoms in the future. At this point, the finding obtained could be argued to make more significant as to why both these thought patterns are observed in the clinical manifestation of depression.

Supporting the approach to anxiety in two different types, it is remarkable in this study that worry does not explain the variance in the anxiety experienced in the last week, but the variance in trait-anxiety. BAI is an assessment tool constructed by focusing less on the cognitive properties and more on the somatic symptoms of anxiety related to the arousal, in order to decrease the common variance shared by depressive symptoms as assessed by BDI (Beck et al. 1988). Also the examinations of Creamer et al. (1995) showed that this instrument functions as a state-anxiety instrument, and can assess only the physical symptoms of anxiety in nonclinical groups and its cognitive dimension only activates when there is a stressful situation. Similarly, Leyfer et al (2006) investigated the practicability of BAI in anxiety disorders as a screening tool and found that the most significant component it could distinguish between GAD, SP, SAD and OCD groups was the panic symptoms. In the light of this information, it is an

Figure 1. The interaction effect of worry and brooding on depressive symptoms.
expected finding that trait-like worry as assessed in the present study explains the trait-anxiety characteristics instead of panic-like somatic symptoms of anxiety. On the other hand, in line with the Borkovec’s (1994) cognitive avoidance theory, worry enables the individual to put some distance between the emotional stimulant and himself, and thus enabling the individual to regain his sense of emotional and physiological control. From this perspective, individuals avoid aversive images, somatic anxiety and other negative emotions with the help of worrying. Therefore, the finding that worry does not explain the somatic components of anxiety may be evaluated as a finding supporting the avoidance theory. The significant role of brooding in explaining the increase in somatic anxiety level after controlling for the effect of depressive symptoms can be linked to the negative metacognitive beliefs about dangerousness and uncontrollability of rumination (Papageorgiou & Wells 2001a, 2003, Wells 2000, 2009) that would develop in time for individuals who ruminate in order to solve problems. Investigating this proposition in future studies, in which not only the rumination levels but also the metacognitive beliefs about rumination are considered, would be significant.

Another remarkable finding obtained from this study is that reflection does not have any significant role in explaining anxiety and depression symptoms. This finding is thought to be interpreted among the positive functions of rumination. As it was argued by Treynor et al. (2003) in their development study of the short and dimensional version of RRS, all rumination types may not yield negative effects per se, and some rumination types may bear adaptive functions towards problem solving. At this point, the findings obtained supports that reflection represents a kind of positive function. As a similar finding, Mezulis et al. (2011) in their longitudinal study examining the mediation role of different dimensions of rumination to depressive symptoms in adolescents, found that while reflection was related cross-sectionally to depressive symptoms, it did not mediate longitudinally to the relation between negative affect and depressive symptoms. It is seen that, the studies which examined the relationship between rumination and depressive symptoms do not generally focus on the types of rumination. While this tendency facilitates the comparability of the results, in future studies types of rumination should be distinguished and the validity of the results obtained up to now should be re-examined.

This study bears some limitations with regard to its analysis unit, method and data collection instruments. Firstly, the findings were obtained from a nonclinical university sample; they should not be generalised to other analysis units and the examinations mentioned here should be repeated on clinical groups. It is of essential importance to examine diagnosed groups in studies aiming at explaining anxiety and depression symptoms, due to the possibility of obtaining different results when compared to the ones obtained from nondiagnosed groups. In addition, the results of the study should be evaluated in the limits of a cross-sectional and correlative research design. As the findings demonstrate, it would be beneficial to use different assessment tools where cognitive and somatic symptoms are balanced in the future studies, especially on anxiety.

Beyond these limitations, it is possible to mention some significant implications to be projected from the findings of the study. Primarily, independently from anxiety-depression comorbidity, worry characterise depression as well as anxiety, and rumination characterise anxiety as well as depression. Therefore, it may be necessary to conduct assessment and intervention procedures for worry and rumination independently from the diagnostic profile pertaining to mood and anxiety disorders. Similarly, with regard to increasing efficacy of treatment, worry should also be considered when intervening in depressive manifestations, and rumination in acute and chronic anxiety manifestations. However, it should be kept in mind that the reflection type rumination has a possible adaptive function and much as worry and depression related, this relation is significant together with a high level of brooding type ruminate activity.

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