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Rumination and worrying as possible mediators in the relation between neuroticism and symptoms of depression and anxiety in clinically depressed individuals

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ABSTRACT

Rumination and worrying are considered possible mediating variables that may explain the relation between neuroticism and symptoms of depression and anxiety. The current study sought to examine the mediational effects of rumination and worry in the relationships between neuroticism and symptoms of depression and anxiety in a sample of clinically depressed individuals ($N = 198$). All patients completed a battery of questionnaires including measures of neuroticism, rumination, worrying, depression, and anxiety. Results showed that in subsequent analyses, rumination and worrying both mediated the relation between neuroticism and depression and anxiety. When rumination and worrying were simultaneously entered in the mediation analysis, only rumination was found to mediate the relation between neuroticism and symptoms of anxiety and depression. Two components of rumination (i.e., brooding and reflection) were also analyzed in the mediational analysis. Both reflection and brooding were significant mediators with respect to depressive symptoms, whereas brooding was the only significant mediator in relation to anxiety symptoms. The results are discussed in the light of current theories, previous research, and recent treatment developments. Clinical implications and suggestions for future research are provided.

Introduction

Neuroticism has been considered one of the personality traits most relevant to predisposing individuals to psychopathology, in particular depression and anxiety (e.g., Akiskal, Hirschfeld, & Yerevanian, 1983; Widiger & Trull, 1992). There is good support for the associations between neuroticism and symptoms of depression and anxiety in clinical and non-clinical samples (e.g., Boyce, Parker, Barnett, Cooney, & Smith, 1991; Duggan, Lee, & Murray, 1990; Kendler, Kessler, Neale, Heath, & Eaves, 1993; Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Ormel, Oldehinkel, & Brilman, 2001; Roberts & Gotlib, 1997; Saklofske, Kelly, & Janzen, 1995, Surtees & Wainwright, 1996). A number of processes have been proposed that may account for the relation between neuroticism and symptoms of depression and anxiety. More specifically, neuroticism can lead to negative biases in attention (e.g., Derryberry & Reed, 1994) and memory (e.g., Martin, 1985), as well as to a cognitive and behavioural style of a ruminative focus on depressive symptoms (e.g., Roberts, Gilboa, & Gotlib, 1998).

There are a number of conceptualizations of rumination in the literature. For example, Martin and Tesser (1989) have defined rumination in terms of conscious thoughts around a theme that might help individuals to attain personal goals. In the context of depression, Nolen-Hoeksema (1991) has defined depressive rumination as responses that involve a pattern of behaviors and thoughts about symptoms of depression and the possible causes and consequences of these symptoms. There is evidence to suggest that depressive rumination (note that we will refer to 'rumination' from here) is related to neuroticism (e.g., Cox, Enns, Walker, Kjernisted, & Pidlubny, 2001; Lam, Smith, Checkley, Rijsdijk, & Sham, 2003; Roberts et al., 1998), with some authors postulating that a ruminative response style might be considered one of the cognitive manifestations of neuroticism (e.g., Segerstrom, Tsao, Alden, & Craske, 2000). There is also good support for an association between rumination and symptoms of depression (see for reviews Lyubomirsky & Tkach, 2004 and Nolen-Hoeksema, 1998). Interestingly, recent research has shown that a ruminative

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response style might not only be characteristic for depression but is also related to anxiety (e.g., Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Muris, Roelofs, Meesters, & Boomsma, 2004; Segerstrom et al., 2000). Thus, rumination seems to be a cognitive vulnerability factor for both depression and anxiety.

There has also been some research aimed at examining the specificity of various forms of negative thinking in psychopathology. More specifically, worry is another form of unproductive, negative, and repetitive thinking that bears strong resemblance to the construct of rumination. Worrying can be defined as an apprehensive expectation of possible negative outcomes in the future, and has traditionally been linked to anxiety (Borkovec, Robinson, Pruzinsky, & DePree, 1983). There is some debate as to whether rumination and worry are to be considered similar or different forms of repetitive thinking. Factor analytic studies have revealed that both constructs are distinctive (e.g., Fresco et al., 2002; Muris et al., 2004). However, it may also be the case that these findings reflect the wording of the materials used such that items with "worry" in their description tend to group together, whereas items with "depression" or "rumination" in their description tend to group together as well. Several other researchers have failed to find as much difference between rumination and worry (e.g., Segerstrom et al., 2000; Watkins, Moulds, & Mackintosh, 2005), where the only difference found was temporal orientation, with rumination focused on the past and worry focused on the future. Despite this debate, there is evidence to suggest that worrying is related to depression (e.g., Fresco et al., 2002; Muris, Fokke, & Kwik, in press; Muris et al., 2004; Muris et al., 2005; Starcevic, 1995) and to neuroticism (e.g., Davey & Tallis, 1994; Keogh, French, & Reidy, 1998; Muris et al., in press; Muris et al., 2005).

Taken together, the available research suggests a mediational model in which neuroticism is associated with rumination, which in turn is related to symptoms of depression and anxiety. To date, there is indeed some evidence for this mediational model in undergraduates (Muris et al., 2005; Roelofs, Huibers, Peeters, & Arntz, 2008) and in adolescents at risk for depression (Kuyken, Watkins, Holden, & Cook, 2006; Muris et al., in press). Muris et al. (2005) also found evidence for worry as a mediator in the relation between neuroticism and symptoms of anxiety and depression. However, to the authors' best knowledge, the mediation model has hitherto not been tested in clinically depressed individuals. The present study was aimed to fill this gap by investigating the mediational effects of rumination and worry in the relation between neuroticism and symptoms of depression and anxiety in clinically depressed individuals. We applied a stepwise approach to the mediational analyses, first investigating the effects of rumination and worry in separate analyses, followed by a model in which rumination and worry were entered simultaneously as mediators. We hypothesized that (1) neuroticism would correlate positively with symptoms of depression and anxiety, (2) neuroticism would be positively associated with rumination and worry; (3) rumination and worry would be associated with symptoms of depression and anxiety, and (4) the associations between neuroticism and symptoms of depression and anxiety would be reduced or eliminated when controlling for the mediating variables of rumination and worry.

With respect to predictions of the mediation model, it is important to view rumination and worry as forms of repetitive thinking, which can have constructive and unconstructive consequences (Watkins, 2008). Rumination is characterized by negatively valenced thought content (thoughts about depressive mood), a negative intrapersonal context (i.e., depressed mood, negative self-beliefs), and an abstract level of construal (i.e., thinking about meanings and implications). Worry might have both unconstructive and constructive consequences. More specifically, worry characterized by an abstract level of construal and negative interpersonal context is unconstructive, whereas a concrete level of construal is considered constructive (see Watkins, 2008). In the current study, rumination and worry are operationalized at an abstract level of construal and are, therefore, considered to be positively associated with symptoms of anxiety and depression in the mediation analyses.

As rumination is considered a multi-component process (e.g., Siegle, 2000), we also examined the effects of two components of rumination (i.e., reflection and brooding) that have been proposed (Treynor, Gonzales, & Nolen-Hoeksema, 2003). Although there is some support from previous research that reflection might have beneficial effects on depressed mood (e.g., Joormann, Dkane, & Gotlib, 2006; Roelofs et al., 2008; Treynor et al., 2003), other studies have failed to find beneficial effects of reflection. For example, Burwell and Shirk (2007) found evidence to suggest that brooding but not reflective pondering predicted the development of depressive symptoms over time in adolescents and Rude, Maestas, and Neff (2007) have shown that changing the negative judgmental quality of items indicative of reflection resulted in a reduced relationship of reflection and depression, suggesting that reflection may have negative consequences. In accounting for the effects of reflection, Trapnell and Campbell (1999) have identified a neurotically motivated, threat-avoidant form of chronic self-focus that they labeled rumination, and an contrasting form of chronic self-focus motivated by epistemic curiosity which they referred to as reflection. The former would contribute to symptoms of psychopathology, whereas the latter form of self-focus would be associated with increased self-knowledge. The Interacting Cognitive Subsystems Theory (Teasdale & Barnard, 1993; Teasdale, Segal, & Williams, 1995) makes a difference between an analytic ruminative self-focus and an experiential form of self-focus, with the former considered to be detrimental and depressogenic and the latter to be more beneficial. Taken together, we consider both brooding and reflection as analytical forms of ruminative self-focus that involve an abstract level of construal resulting in unconstructive consequences. Therefore, we hypothesize both brooding and reflection to be positively associated with symptoms of depression and anxiety in the mediational analyses.

Method

Participants and procedure

Participants comprised a consecutive sample of 198 clinically depressed patients (56% females) who were seeking treatment at the mood disorders treatment program of the Maastricht community mental health center (RIAGG Maastricht). The center is a secondary care setting where individuals with a variety of psychiatric disorders are treated after referral by the general practitioner or other health professionals. The inclusion criterion was a primary diagnosis of major depressive disorder (MDD) as determined with the Structured Clinical Interview for DSM-IV axis I (SCID-I; First, Spitzer, Gibbon, & Williams, 1997). The SCID-I is carried out as part of the regular intake procedure within the mood disorders program by trained master's or doctoral-level psychologist, psychotherapists, psychiatrists, and senior residents in psychiatry (supervised by psychiatrists with a minimum of 5 years clinical experience). Exclusion criteria at entry were other primary diagnoses other than MDD (e.g., psychotic disorder, substance abuse), high acute suicide risk, and insufficient fluency in the Dutch language. Measurements (see *measures*) were completed as part of a naturalistic treatment study. After a complete description of the study to the participants, written informed consent was obtained. Mean age of the sample was 42.4 years (SD = 10.5; range 19–63). All patients were Caucasian. Mean total score on the 90-item version of