



The temporal precedence of metacognition in the development of anxiety and depression symptoms in the context of life-stress: A prospective study

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ARTICLE INFO

Article history:

Received 5 July 2010

Received in revised form 1 November 2010

Accepted 1 November 2010

Keywords:

Metacognition

Anxiety

Depression

Stress

Prospective study

ABSTRACT

According to the metacognitive theory of psychological disorder, metacognitions are vulnerability factors in predicting development of psychological symptoms. The present study investigated metacognitive factors and life stress in a prospective test of their proposed temporal precedence in the development of anxiety and depression symptoms. Participants were 172 students and adults recruited in Ankara and Bolu, Turkey. Two separate sets of hierarchical regression analyses were conducted. In these analyses, Time 2 anxiety or depression was regressed on the main and interaction effects of metacognition and stress after controlling for baseline symptom levels measured at Time 1, age, and gender. Results revealed that negative metacognitive beliefs about the uncontrollability and danger of worry significantly predicted residual change in both anxiety and depression after controlling for the negative effect of stressful life events. Furthermore, lack of cognitive confidence interacted with daily hassles to predict the change in anxiety, when the baseline level of anxiety and other individual differences were controlled. Our results support the metacognitive theory of psychopathology.

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1. Introduction

A central idea in the metacognitive theory of psychological disorders (Wells, 2000; Wells & Matthews, 1994) is that dysfunctional beliefs about cognition, which constitute metacognition, are the basis for the development and maintenance of clinical problems. Specifically, beliefs about sustained thinking and the uncontrollability and danger of thoughts lead to a pattern of thinking dominated by worry, rumination, fixation on threat and counter-productive thought control processes. As a result, a sense of threat and sustained thinking prevails such that negative emotions persist.

In the theory, metacognitions are generic causal factors in predicting the development of a broad range of psychological disorder (Wells, 1997, 2000, 2009). Although different metacognitive models draw out specific components relevant to individual psychological disorders, a central theme cutting across all the metacognitive conceptualizations is an emphasis on beliefs and knowledge that individuals have about their own thinking patterns. In particular, metacognitions in the form of positive and negative beliefs about thinking (e.g., “I must worry in order to be prepared”; “I cannot control my thoughts”) and selective attention to inter-

nal cognitive events function as general purpose plans that guide information processing and maintain maladaptive processing routines leading to emotional disturbance (Wells, 1997, 2000; Wells & Matthews, 1994).

The theoretical framework suggested by the metacognitive model was initially elaborated to clarify development and maintenance mechanisms of generalized anxiety disorder (Wells, 1995, 1999). In line with the theory, it has been shown that metacognitive beliefs were strongly associated with pathological worry (Davis & Valentiner, 2000; Wells & Carter, 1999; Wells & Papageorgiou, 1998). In recent years, the metacognitive approach has been influential in problems such as obsessive-compulsive disorder (Cartwright-Hatton & Wells, 1997; Cohen & Calamari, 2004; Emmelkamp & Aardema, 1999; Fisher & Wells, 2005; Gwilliam, Wells, & Cartwright-Hatton, 2004; Myers & Wells, 2005; Purdon & Clark, 1999; Wells & Papageorgiou, 1998). Here, metacognitive beliefs concern the power and importance of thoughts to cause or portend harm and this leads to worry about intrusions. In major depression (Papageorgiou & Wells, 1999; Papageorgiou & Wells, 2003), individuals respond to negative thoughts with sustained rumination because they hold positive beliefs about the value of such a process and they come to believe that the process is beyond their control. In post traumatic stress disorder (Holeva, Tarrier, & Wells, 2001; Wells & Sembi, 2004), beliefs about intrusions and use of perseverative thought control strategies lead to a persistence of symptoms. Predisposition to auditory hallucinations (Lobban,

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Haddock, Kinderman, & Wells, 2002), hypochondriasis (Bouman & Meijer, 1999), and test-anxiety (Matthews, Hillyard, & Campbell, 1999) have also been shown to be associated with beliefs about thoughts as predicted by the theory.

Despite growing evidence for the metacognitive theory, some important aspects remain to be empirically validated. In particular, much of the evidence for the theory comes from cross-sectional designs that prevent causal interpretations. This is because an association of a variable with symptoms may be a consequence rather than cause of symptom occurrence. For example, it may well be that metacognitive factors lead to emotional psychopathology, but it is also possible that these metacognitive constructs are just by-products of psychological distress. Thus, if metacognition is a vulnerability factor for development of many psychological disorders as asserted in the metacognitive model of psychopathology, then a prospective test of the theory is necessary. On the other hand, the mere existence of a vulnerability factor without existence of a precipitating factor is not a sufficient condition to lead to psychological disorder, although it is necessary. Instead, a pre-existing vulnerability factor later interacts with stress to lead to psychological disturbance. Thus, a prospective vulnerability-stress study should be designed in order to draw firmer conclusions regarding the role of metacognitive factors in the etiology of psychopathology.

In this context, the present study attempted to investigate metacognitive factors and life stress in a two-time measurement design, to be able to test the temporal precedence of metacognitions as vulnerability factors in the development of anxiety and depression symptoms. Establishing a relationship of this kind is an initial step that would be consistent with the idea that metacognitions cause emotional symptoms, although the design cannot provide definitive evidence of causality. In line with this aim, the metacognitive model suggests several possible patterns of result. First, metacognitions may contribute to change in symptoms over and above exposure to stress. Second, metacognitions may interact with stress (i.e., be activated by stress) leading to more negative emotions, hence maintaining anxiety and depression. Third, the contribution of metacognitions may be tested in the context of different life events such as daily hassles and more traumatic experiences, as long as the stressor intensifies self-focused attention and threatens self-regulation. Thus, the specific hypotheses with respect to the aim of the study and the propositions of the metacognitive theory were as follows: (1) metacognitive beliefs and processes measured at Time 1 would prospectively predict anxiety and depression at Time 2, when stress occurrences (in the context of both major life events and daily hassles) between the two measurement times are controlled, along with the pre-existing symptom level; (2) metacognitive beliefs and processes measured at Time 1 would interact with stress (both major life events and daily hassles) to predict change in the severity of symptomatology, when the level of preexisting symptom severity is controlled.

2. Method

2.1. Participants

A hundred and seventy two participants comprising 103 (59.9%) females and 69 (40.1%) males participated in the present study. The age of the sample ranged from 19 to 47 years ($M = 24.14$, $SD = 5.74$). While 138 (80.2%) of the participants were students from various departments of Abant İzzet Baysal University (AIBU) and Middle East Technical University (METU), 34 (19.8%) were employees at the AIBU.

2.2. Instruments

2.2.1. Meta-Cognitions Questionnaire-30 (MCQ-30)

The MCQ-30 (Wells & Cartwright-Hatton, 2004) measures a range of metacognitive beliefs and processes relevant to vulnerability to and maintenance of emotional disorders. The items are rated on a 4-point scale with 1 labelled *do not agree* and 4 *agree very much* and the scores can range from 30 to 120. The MCQ-30 is composed of five correlated but conceptually distinct factors (shorthand in parentheses): (1) positive beliefs about worry (positive beliefs), which assesses the extent to which the person believes that worrying is helpful, (2) negative beliefs about worry concerning uncontrollability and danger (uncontrollability and danger), which measures the extent to which the person believes that worrying is uncontrollable and dangerous, (3) lack of cognitive confidence, measuring low confidence in memory, (4) beliefs concerning the need to control thoughts and consequences of not controlling one's own thoughts (need to control thoughts), and (5) cognitive self-consciousness, assessing the tendency to monitor one's own thoughts and focus attention inwards. Total scores for the MCQ-30 and its subscales are obtained by summing all items and higher scores indicate higher levels of metacognitive beliefs or processes. Wells and Cartwright-Hatton's study (2004) conducted with student and non-student participants demonstrated that the MCQ-30 had good psychometric qualities. Accordingly, the internal consistency of the total MCQ-30 ($\alpha = 0.93$) and its subscales ($\alpha = 0.92, 0.91, 0.93, 0.72$, and 0.92 , respectively) were found to be satisfactory. Test-retest reliability, after a period of 22–118 days, was reported as high (0.75) for the total MCQ-30, while stability of the subscales ranged from acceptable to good (0.79, 0.59, 0.69, 0.74, and 0.87, respectively). As evidence of convergent validity, total and subscale scores of the MCQ-30 were found to be significantly and positively correlated with measures of pathological worry, obsessive-compulsive symptoms, and trait anxiety in many studies (e.g., Myers & Wells, 2005; Wells & Cartwright-Hatton, 2004).

The MCQ-30 was translated into Turkish by Yılmaz, Gençöz, and Wells (2008). Consistent with the original scale, the Turkish version of the instrument was found to be composed of five factors. Reliability analyses with respect to internal consistency and split-half reliability procedures indicated that the instrument and its subscales have high reliability. In addition, test-retest coefficients and tests of differences between two applications supported the stability of MCQ-30 and its subscales across time in a Turkish sample in parallel with the findings in the original study (Wells & Cartwright-Hatton, 2004). Providing evidence for the convergent validity of the MCQ-30 and its subscales, the relationships with measures of pathological worry, obsessive-compulsive symptoms, state and trait anxiety, and depression were significant and in the expected direction.

2.2.2. Beck Anxiety Inventory (BAI)

The BAI (Beck, Epstein, Brown, & Steer, 1988; Beck, Steer, & Garbin, 1988) consists of 21 items and is a 4-point Likert type measure of cognitive and somatic symptoms of anxiety. Scores range from 0 to 63, with higher scores indicating higher levels of anxiety. Good internal consistency and high short-term test-retest reliability has been demonstrated in mixed psychiatric samples and patients with anxiety disorders (Beck, Epstein, Brown, & Steer, 1988; Beck, Steer, & Garbin, 1988; de Beurs, Wilson, Chambless, Goldstein, & Feske, 1997), as well as non-clinical samples (e.g., Creamer, Foran, & Bell, 1995). As for concurrent and convergent validity, the BAI was found to be moderately correlated with anxiety ($r_s = 0.36$ to 0.69) and depression ($r_s = 0.25$ to 0.56) measures in psychiatric (Beck, Epstein, Brown, & Steer, 1988; Beck, Steer, & Garbin, 1988) and student samples (Osman, Kopper, Barrios, Osman, & Wade, 1997). The psychometric properties of the Turk-

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