Development and initial validation of a measure of metacognitive beliefs in health anxiety: The MCQ-HA.

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ABSTRACT

Metacognitive beliefs have been shown to correlate with emotional disorders and more recently have been implicated in health anxiety. Research exploring these beliefs have tended to use the Metacognition Questionnaire (MCQ), which is a general measure. To facilitate research on the metacognitive model applied to health anxiety the present study reports on the development and initial evaluation of a new specific metacognitive measure of health anxiety, the Metacognitions Questionnaire-Health Anxiety (MCQ-HA). Principal components analysis identified 14 suitable items to be explored. Subsequent exploratory factor analysis of the MCQ-HA identified three factors: "Beliefs that Thoughts can cause Illness", "Beliefs about Biased thinking", and "Beliefs that Thoughts are Uncontrollable". Confirmatory factor analysis supported the three factor model with all selected goodness-of-fit statistics equivalent to or better than recommended values. Preliminary evidence suggests good internal-consistency, incremental, convergent and discriminant validity in relation to associated measures. The MCQ-HA appears to be a potentially useful predictor of health anxiety.

1. Introduction

Health anxiety (HA) is prevalent in both community samples (3.5%) (Sunderland et al., 2013) and in medical care services (20%) (Tyrer et al., 2011). Disorders of HA exist on a continuum from mild to severe (Ferguson, 2009; Taylor and Asmundson, 2004) and have a major functional impact on the sufferer and health care services (Barsky et al., 2001; Fink et al., 2010).

Cognitive-behavioural therapy (CBT) models have been used to conceptualise and treat health anxiety. It is a condition normally associated with beliefs regarding the presence of illness and a preoccupation about being ill (Salkovskis et al., 2002). These approaches specify several dysfunctional cognitions as important in both the development and maintenance of the disorder (Abramowitz and Braddock, 2008; Fergus, 2013; Marcus and Church, 2003). CBT treatments tend to target specific beliefs (e.g. "Unexplained symptoms are a sign of serious illness") as a means of reducing health anxiety symptoms and such approaches have demonstrated efficacy (see Olatunji et al. (2014) for a review).

More recently, Wells and Matthews (1994, 1996) have suggested that the beliefs emphasised in CBT models may not be so

central to psychological disorder after all. Instead, they propose that the regulation of thinking and beliefs about thoughts are more important. In their Self-Regulatory Executive Function model (S-REF), psychological disorders such as health anxiety result from excessive thinking (e.g. about illness) that is difficult to bring under control. This thinking style is dominated by worry and rumination and is the consequence of metacognitive beliefs. These specific beliefs which individuals hold about particular types of thoughts tend to be both positive and negative in nature, for example "worry will help me cope" and "worry is dangerous".

Metacognition is a far reaching term that incorporates knowledge and regulation of various aspects of cognitive activity (Moses and Biard, 1999). The Wells and Matthews (1994, 1996) model is supported by data demonstrating that metacognitive knowledge in the form of specific beliefs individuals hold about their own cognition is reliably correlated with emotional disorder and symptoms, such as OCD (e.g. Gwilliam et al., 2004), generalised anxiety (e.g. Khawaja and McMahon, 2011; Wells and Carter, 1999, 2001), PTSD (Bennett and Wells, 2010) and depression (e.g. Papageorgiou and Wells, 2009). Studies that have tested the role of metacognition in psychological disorders have used the Metacognitions Questionnaire (MCQ: Cartwright-Hatton and Wells, 1997) or the shortened version Metacognitions Questionnaire-30 (MCQ-30: Wells and Cartwright-Hatton, 2004).

In the domain of health anxiety a number of studies have begun to explore the relationship between metacognition and this

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presentation. Bouman and Meijer (1999) identified that metacognition was a positive predictor of extreme health anxiety, using a metacognitive measure of health anxiety used specifically for the study, The Metacognitions about Health Anxiety questionnaire (MCHA). Barenbrügge et al. (2013) identified that both negative and positive metacognitive beliefs were strongly and positively associated with all aspects of health anxiety. Bailey and Wells (2013) also identified that metacognitive beliefs were strongly associated with health anxiety and had predictive power over and above other correlates associated with this disorder, such as illness cognition and somatosensory amplification. A more recent study also indicated that metacognitive beliefs moderate the relationship between health anxiety and catastrophic misinterpretation (Bailey and Wells, 2015).

Although the MCQ-30 was used in these studies it is limited as it does not directly capture health-anxiety specific metacognitive beliefs and therefore may have reduced sensitivity and specificity in this context. Also none of the items on the MCQ-30 specifically relate to health anxious beliefs which impacts the face validity of the measure and clinical utility when applied to a health anxious population. Equally, although a metacognitive measure of health anxiety (MCHA) has been developed, little is known about its psychometric properties nor has it been subjected to any detailed exploratory or confirmatory factor analysis. Additionally the current proposed measure differs from the MCHA in several important respects: (1) the current measure (MCQ-HA) is based on expert opinion of one of the originators of the MCQ30, which is not the case for the MCHA; and (2) the MCQ-HA included additional items based on metacognitive therapy with health anxious patients, leading to a wider item pool than evident in the MCHA and MCQ-30 (specifically tapping new areas around beliefs concerning biased thinking).

To facilitate research on the Wells and Matthews model applied to health anxiety the present study reports on the development and initial evaluation of a new metacognitive measure of health anxiety, the Metacognitions Questionnaire-Health Anxiety (MCQ-HA). When developing and evaluating a new measure Matsunaga (2010) reinforces Thompson's (2004) recommendations of a three stage approach, which was used to guide the present study; (1) screening items on the MCQ-HA using principal components analysis; (2) scrutinising the remaining items on the MCQ-HA using exploratory factor analysis; and (3) detailed examination of the factor structure of the MCQ-HA using confirmatory factor analysis. We also report preliminary data on the internal consistency and convergent and divergent validity of the measure.

2. Study 1

2.1. Methods

2.1.1. Participants

A cross-sectional study was undertaken with convenience sampling used for participant selection. Students were approached about the study via University e-mail and full details were provided about the study and its aims, with the option of consenting or not. Three hundred and fifty one students undertaking a nursing degree completed the questionnaire. This particular student demographic was chosen as previous research has revealed that health anxiety is normally distributed in student populations (Marcus et al., 2008) and in nursing students specifically (Zhang et al., 2014). Information about participant's age and gender was obtained. Three hundred and fourteen of these participants were female (89.5% of the sample) and thirty seven were male (10.5% of the sample). All participants provided details about their age. The age range was 19–59 years, with a mean age of 27 years (SD = 7.48

years). Ethical approval was granted from the University of Manchester's ethical committee.

2.2. Measures. The Meta-Cognitions about Health Questionnaire (MCQ-HA)

Two sources of information were used to generate initial categories of items for the new MCQ-HA; (1) the items and subscales on the existing MCQ-30; and (2) patient reports of metacognitions recorded by the second author during treatment of health anxiety cases. On this basis the following categories of items were generated: (1) negative beliefs about optimistic thinking (e.g. "I will be punished for thinking I am in good health"); (2) positive beliefs about worry (e.g. "Anticipating illness means I won't be taken by surprise"); (3) beliefs about uncontrollability of worry (e.g. "Only if I have a diagnosis will I be able to stop worrying"); (4) beliefs about the danger of worrying (e.g. "I could lose my mind through health worry"; and (5) fusion/need for control beliefs (e.g. "Thinking I am ill means I am ill"). Twenty items were initially generated to capture these domains. Unlike the MCQ-30 we did not include metacognitive beliefs relating to self-consciousness or cognitive confidence because we aimed to specifically measure beliefs about thoughts rather than monitoring (self-consciousness), and beliefs about effectiveness of cognitive functioning. We were concerned that the latter may overlap conceptually with disease convictions focusing on mental decline and therefore reflect symptoms of health anxiety.

In addition to the above, Worthington and Whittaker (2006) recommend that item quality should be subjected to expert review, as the second author is a leading expert on metacognition and developer of the MCQ, we relied on this and the source of items to enhance content validity. We retained the 1–4 response scale and labels used in the MCQ-30: 1 (Do not agree); 2 (Slightly agree); 3 (Agree moderately), and 4 (Agree very much).

2.3. Overview of data analysis

To investigate the initial pool of items generated and prepare for exploratory factor analysis principal components analysis (PCA) was conducted on the initial 20 item measure. Using SPSS version 22 the default principal components method of factor extraction was performed on the data, as it has been shown as an acceptable data reduction technique (Costello and Osborne, 2005). Eigenvalues above 1 was selected as this is considered appropriate when running a primary analysis of data screening (Field, 2013; Matsunaga, 2010). As there was a potential for the items in this measure to be correlated, as has been shown in other metacognitive measures, i.e. the MCQ (Cartwright-Hatton and Wells, 1997), oblique rotation (promax) was used. Oblique rotation has been shown to generate solutions with correlated components (Costello and Osborne, 2005; Henson and Roberts, 2006). Both the structure matrix and pattern matrix were inspected and items screened to identify the strength of loadings on the generated components. When screening the items on the pattern matrix, those that had a primary factor loading lower than .32 (Tabachnick and Fidell, 2007) were deemed problematic.

3. Results

Three components emerged and of the 20 items five did not meet criteria and were not retained: (1) "I could lose my mind through health worry"; (2) "Worrying about health will make me more vulnerable to illness"; (3) "Thinking I am ill means I am ill"; (4) "Being optimistic about my health will help me detect problems before it is too late"; and (5) "Anticipating illness means I