



Medical information seeking: Impact on risk for anxiety psychopathology



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ABSTRACT

Background and objectives: Increased utilization of online medical information seeking demands investigation of potentially detrimental effects of these activities. The present study investigated whether viewing medical websites may adversely affect anxiety sensitivity (AS), a well-established risk factor for the development of psychopathology.

Methods: Participants ($N = 52$) were randomly assigned to view medical symptom related websites or general health and wellness control websites. AS was measured before and after the website viewing.

Results: Individuals in the medical website group reported higher AS compared to the control group at post-manipulation after controlling for baseline health anxiety and baseline AS. Additionally, intolerance of uncertainty (IU), an individual difference variable assessing negative beliefs about uncertainty, significantly moderated this effect such that medical website viewing only affected AS in participants with high IU but not in participants with low IU.

Limitations: The limitations of the current study include the lack of individualization of the website viewing and the short duration of the website viewing.

Conclusions: The results of this study provide initial evidence that exposure to online medical information could increase risk for anxiety psychopathology in individuals with elevated IU. Additionally, these results provide support for a learning based model of the etiology of AS.

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Anxiety disorders are the most common class of mental disorders present in the general population (Kessler, Berglund, et al., 2005). The estimated lifetime prevalence of any anxiety disorder is over 28%, while the 12-month prevalence is more than 18% (Kessler, Berglund, et al., 2005; Kessler, Chiu, Demler, & Walters, 2005). The direct estimated annual cost of anxiety disorders is over \$42 billion and anxiety disorders increase risk for other psychiatric disorders (Centers for Disease Control, 2013). Anxiety disorders cause significant social, occupational and quality of life impairment (Kroenke, Spitzer, Williams, Monahan, & Lowe, 2007; Rapaport, Clary, Fayyad, & Endicott, 2005). Although anxiety disorders are often chronic if untreated, much of the burden of anxiety disorders is likely to be avoidable via treatment (American Psychiatric Association, 2013; Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994). However, only 12.7% of individuals with an anxiety disorder receive minimally adequate treatment (Wang et al., 2005).

The development of the Internet has provided users access to a wealth of information about physical and psychiatric illnesses. In fact, online medical information seeking has become a common behavior. A 2010 survey revealed that 62% of adult Internet users had sought out medical information online in the prior month, and 88% had sought such information at least once (Harris Poll, 2010). Medical information seeking is a behavior that has been predominantly linked to health anxiety, which can be defined as a wide range of worries an individual has about his or her health (Taylor, Asmundson, & Coons, 2005). In fact, individuals with elevated levels of health anxiety have been shown to seek online medical information at a greater frequency and for a longer duration than those with low levels of health anxiety (Baumgartner & Hartmann, 2011; Muse, McManus, Leung, Meghreblian, & Williams, 2012). At this point we cannot definitively say that health anxiety leads to increased online medical information seeking, or vice versa, but it is believed that there is a positive feedback loop that increases both frequency of online medical information seeking and health anxiety (Starcevic & Berle, 2013). However, it is yet to be determined how online medical information seeking affects the development and maintenance of other anxiety conditions.

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Theoretically, online medical information seeking could be relevant to the development and maintenance of anxiety disorders through anxiety sensitivity. Anxiety sensitivity (AS) is a widely researched risk factor that refers to a fear of anxiety-related sensations or a “fear of fear” (Reiss, Peterson, Gursky, & McNally, 1986). AS is associated with a number of anxiety conditions including panic attacks (Schmidt, Zvolensky, & Maner, 2006), post-traumatic stress disorder (Marshall, Miles, & Stewart, 2010), compulsive hoarding (Medley, Capron, Korte, & Schmidt, 2013), and health anxiety (Otto, Demopoulos, McLean, Pollack, & Fava, 1998). In addition, AS has been shown to prospectively predict the onset of anxiety psychopathology including panic attacks and panic disorder (Schmidt, Lerew, & Jackson, 1997, 1999; Schmidt et al., 2006).

Since many medical information websites provide information congruent with catastrophic health interpretations of benign anxiety sensations (e.g., dizziness is a symptom of experiencing a stroke), it is possible that repeated exposure to such interpretations via medical information websites contributes to the development and maintenance of elevated AS. At this point there is minimal empirical evidence to support such a claim. However, it has repeatedly been shown that individuals with elevated health anxiety concerns have elevated levels of AS (Abramowitz, Olatunji, & Deacon, 2007; Olatunji et al., 2009; Wheaton, Berman, & Abramowitz, 2010) and it is known that individuals with elevated health anxiety concerns demonstrate high levels of online medical information seeking (Baumgartner & Hartmann, 2011; Muse et al., 2012).

Despite the extensive literature on AS, relatively little is known with regard to the development and maintenance of elevated AS. There have been two predominant theoretical models of the etiology of AS, the predisposition model (e.g., Reiss & Haverkamp, 1996) and the learning model (e.g., Schmidt, Lerew, & Joiner, 2000). The predisposition model posits AS is a heritable and stable trait (Reiss & Haverkamp, 1996; Stein, Jang, & Livesley, 1999). The learning model posits that AS either increases or decreases in response to “learning” about the consequences of anxiety sensations (Reiss & McNally, 1985; Schmidt et al., 2000). The efficacy of one-session interventions in creating durable reductions in AS provides support for the learning model by demonstrating that AS can be affected by environmental factors (Keough & Schmidt, 2012; Schmidt et al., 2007). Therefore, individuals who are exposed or expose themselves to a lot of information about the harmful effects of anxiety sensations may be at risk for increases in AS.

Intolerance of uncertainty (IU) is another construct that may play a role in increasing AS within the context of online medical information seeking. IU is an individual difference variable related to having negative beliefs about uncertainty and its implications (Buhr & Dugas, 2002). IU is conceptually distinct from AS in that individuals with high IU interpret uncertainty in general as dangerous rather than the experience of anxiety related sensations. Previous research has demonstrated that IU and AS are moderately correlated, but that they do not load onto a single factor, demonstrating that IU and AS are also empirically distinct constructs (Carleton, Sharpe, & Asmundson, 2007). Individuals who are high in IU find uncertainty *per se* to be threatening and dangerous. Therefore, given the inherent uncertainty surrounding the medical cause of anxiety-related sensations it would follow that those high in IU would gravitate toward more threatening possible causes of those sensations. In fact, research has shown that IU moderates the relationship between catastrophic health appraisals and health anxiety (Fergus & Valentiner, 2011). Since AS can be thought of as a circumscribed type of catastrophic health appraisals (i.e., appraisals surrounding anxiety-related sensations) it seems logical that IU could affect the degree to which anxiety-related medical website information would affect an individual's AS.

The current study seeks to examine whether viewing online medical websites could contribute to increased AS, and in turn increased risk for the development of anxiety disorders. We hypothesized that participants randomly assigned to the experimental condition (viewing medical websites) would display greater levels of AS at the end of the experiment compared to those in the control condition. Second, we hypothesized that IU would moderate this effect, such that individuals who are in the experimental group and have elevated IU will display the highest levels of AS. Finally, we examined whether the effect of viewing medical websites would show specificity to AS, such that participant's levels of health anxiety *per se* will not be affected.

1. Material and methods

1.1. Participants

The sample consisted of 56 undergraduate students from a large university in the Southern United States. Data from 4 participants was excluded due to procedural issues, yielding a sample of 52 for all analyses. Participants were primarily female (65.4%) with ages ranging from 18 to 41 ($M = 20.70$, $SD = 4.80$). The ethnic/racial breakdown of the sample was as follows: 57.7% of the sample was White, 13.5% was Black, 15.4% was Hispanic, 5.8% was Asian, 1.9% was Native American, and 5.8% reported being of another ethnic group not listed above (e.g., biracial).

1.2. Measures

1.2.1. Anxiety sensitivity

Anxiety sensitivity was measured using the Anxiety Sensitivity Index (ASI). The ASI is a 16-item self-report questionnaire designed to measure the degree to which individuals are concerned about potential negative effects of experiencing anxiety symptoms (Reiss et al., 1986). The ASI is the most extensively used and well validated measure of AS as a unitary construct (Olatunji & Wolitzky-Taylor, 2010). The scale has been found to have strong psychometric properties (Antony, 2001). In the present sample, the coefficient alphas were very good (.90 at baseline and .91 at post-manipulation).

1.2.2. Health anxiety

Health anxiety was measured using the short version of the health anxiety scale (SHAI). The SHAI is a 14-item self-report inventory that measures symptoms of health anxiety and hypochondriasis (Salkovskis, Rimes, Warwick, & Clark, 2002). For each item, participants are asked to select which of four statements best describes their feelings. The SHAI has demonstrated good psychometrics in patient and non-patient groups (Salkovskis et al., 2002). In the current sample, the coefficient alphas for the SHAI were .91 at baseline and .92 at post-manipulation, indicating very good internal consistency.

1.2.3. Intolerance of uncertainty

Intolerance of uncertainty was measured using the Intolerance of Uncertainty Scale (IUS). The IUS is a 27-item self-report questionnaire assessing the degree to which individuals are able to tolerate the uncertainty of ambiguous situations, the cognitive and behavioral responses to uncertainty, perceived implications of uncertainty, and attempts to control the future (Freeston et al., 1994). The IUS has demonstrated good psychometrics (Buhr & Dugas, 2002). In the present sample, the coefficient alpha for the IUS was .93, indicating excellent internal consistency.

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