



Openness moderates the relationship between modern health worries and neuroticism



Garry L. Spink Jr^{*}, Thomas B. Green, Randall S. Jorgensen

Syracuse University, Psychology Department, 430 Huntington Hall, Syracuse, NY 13244, United States

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ABSTRACT

Modern health worries (MHW) has been reported to covary, albeit inconsistently, with measures tapping a tendency for emotional lability. We aim to address this inconsistency, in part, by investigating the moderating influence of openness on the previously reported correlation of MHW with neuroticism. One hundred and forty-three participants completed questionnaires assessing neuroticism, openness and MHW. Results show that neuroticism is weakly related to MHW, and this relationship only was found for low openness participants. Future research examining the associations of MHW, emotional lability and well-being may benefit by incorporating openness.

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1. Introduction

Neuroticism (N) is a personality trait which describes a tendency towards emotional lability (Eysenck & Eysenck, 1975) and to experience negative moods (Costa & McCrae, 1980; Costa & McCrae, 1987). A body of work shows N to covary with a tendency to report symptoms characteristic of worry, dissatisfaction, and physical and psychological distress that generalize across situations (Clark, Watson, & Mineka, 1994; Jorgensen & Richards, 1989; Lommen, Engelhard, & van den Hout, 2010; Watson & Clark, 1984). Individuals who score high in N are thought to appraise situations in a more threatening manner (Costa & McCrae, 1987; Drabant et al., 2011; Schneider, Rench, Lyons, & Riffle, 2012). In comparison to low N people, high N people have been shown to (a) be more reactive to adverse contexts and anticipation of such events (Hoerger & Quirk, 2010; Lommen et al., 2010) and (b) score higher on harm-avoidance (Doty, Japee, Ingvar, & Ungerleider, 2013).

1.1. Personality and modern health worries

Elements of modern life can be viewed as threatening to an individual's health and well-being. It has been found that aspects of

modern life, such as motor vehicles and toxic agents, are disproportionately reported as risky in media outlets as dangerous when compared to their actual risk (Frost, Frank, & Maibach, 1997). This disproportionate reporting helped to spark research investigating reactions to such risk appraisal. At the turn of the century, the concept of modern health worry (MHW) was introduced (Petrie et al., 2001) to examine the associations of the perceived risky aspects of modern life with factors related to personal well-being. Prior research has shown a relationship between MHW and measures of health, including reporting of physical symptoms (Filipkowski et al., 2010; Petrie et al., 2001; Petrie et al., 2005; Rief et al., 2012), rates of chronic fatigue syndrome (Petrie et al., 2001), depressed mood (Rief et al., 2012), seeking of alternative medicine (Furnham, 2007; Petrie et al., 2001), healthcare utilization (Andersen & Jensen, 2012; Petrie et al., 2001), and medication use (Filipkowski et al., 2010). Although a body of work utilizing this construct is developing, gaps in our understanding of this construct remain.

Personality variables have been found to covary with MHW. In particular, two studies have shown an association between trait negative affect, a similar construct to N (Watson & Clark, 1984), and MHW (Filipkowski et al., 2010; Petrie et al., 2001). Another study showed a relationship between N and MHW (Andersen & Jensen, 2012). Not all results have supported this association, as two studies have not found support for a relationship between N and MHW (Furnham, 2007; Furnham, Strait, & Hughes, 2012). Descriptions of these studies are provided in Table 1 below.

By examining the influence of individual differences on MHW, future research on its links with psychological and physical

Abbreviations: MHW, modern health worry(s); O, openness; N, neuroticism/emotional lability/negative affect.

^{*} Corresponding author. Tel.: +1 315 443 2354; fax: +1 315 443 4085.

E-mail address: gspinkj@syr.edu (G.L. Spink Jr).

well-being can proceed in a more informed fashion. It is possible that the association of N with MHW may be more precisely isolated with examination of the moderating impact of third variable (viz., openness to experience), which is key aim of this investigation.

1.2. Current study

The aim of this research was to examine if openness (O) moderates a previously reported association between MHW and a measure of N. By not deploying moderator analyses, relationships between MHW and N may have been obscured. O is part of the Five Factor model of personality and is conceptualized as including intellectual curiosity, imagination, innovativeness, and need for variety (McCrae & Costa, 1985). Likewise, Williams, Rau, Cribbet, and Gunn (2009) proposed that those high in O are oriented to novelty seeking; this orientation is thought to encourage engaging in a variety of situations and searching for new experiences, both of which require the ability to tolerate ambiguity. For high O persons, then, the ability to tolerate ambiguity appears to be associated with receptiveness to the challenges of change without being overwhelmed by threat (cf. Bardi, Guerra, & Ramdeny, 2009; McCrae, 1996; McCrae & Costa, 1985). It is conceivable that the intellectual curiosity, innovation, and challenge aspects of O may reduce the N emotional reactivity as possible adverse consequences of technology are contemplated. That is, the potential aftermath of technological advances are viewed, for instance, as potential challenges and room for innovation in lieu of posing a threat to health and well-being. Interestingly, Williams et al. report that O showed a stress buffering effect, as reflected in its moderating the relationship between self-reported, past year stressful events, a correlate of N (Bolger & Schilling 1991), and sleep quality, with stressful events being unrelated to poor sleep quality among high O participants. This moderating effect may extend to associations of worry about environmental and modern influences with markers of sensitivity to emotional lability (viz., moderate the relationship between N and MHW). In other words, individuals scoring high in N, who also are open to a variety of experiences and ways of thinking, may be less threatened by new technological advancements, which may then reduce the association of N with MHW since less worry and anxiety are reflected in the MHW scores. We, therefore, expected O to moderate the relationship between N and MHW, with the association of N with MHW being obtained only for low O people.

Our hypotheses were as follows:

1. N will be positively related to MHW.
2. O will moderate the relationship between N and MHW, with this relationship being found for only low O participants.

2. Method

2.1. Participants and procedure

One hundred and forty-four participants took part in this study (39% male and 61% female), of which 143 provided sufficient information to allow for analyses. Participants were students at a north-east university who participated for class credit. They ranged in age from 18–30 (mean 19.06), and were predominantly Caucasian (Caucasian-57.6%; African American-6.3%; Hispanic-12.5%; Asian-21.5%; Other-2.1%).

Data was collected in a group setting using online questionnaires. After consent, participants were assigned a random ID number and then instructed to complete the questionnaires alone. Procedures were approved by the Institutional Review Board.

2.2. Measures

2.2.1. Modern health concerns scale (MHCS)

The Modern Health Concern Scale (MHCS) is a 27 item scale designed to measure worry about how aspects of modern life influence health status (Petrie et al., 2001). Examples of items include *Cellphones*, *Air Pollution*, and *Hormones in Food*. These items are rated on a 5 point scale from *No Concern* to *Extreme Concern*. The original scale demonstrated good psychometric properties (Petrie & Wessely, 2002; Petrie et al., 2001). We used the 28 item version developed by Furnham et al. (2012) that included a *Bioterrorism* item. In this study the Cronbach's Alpha was 0.95.

2.2.2. Big Five inventory

The Big Five Inventory (BFI) was created to measure the personality traits encompassing the Five Factor Model (John, Donahue, & Kentle, 1991), and has scales measuring O, Conscientiousness, Extraversion, Agreeableness, and N. It consists of 44 items which are rated on a 5 point Likert scale. The psychometrics of this scale have been reported in detail elsewhere (John & Srivastava, 1999). For this study, we used the O, and N scales, which had Cronbach's Alpha of 0.71 and 0.83 respectively.

3. Results

3.1. Descriptive statistics and correlational analyses

Means and standard deviations of the scales are reported in Table 1. Descriptive statistics of personality/trait measures are similar to those reported previously (Catterson, 2007). No differences in MHW were found due to gender ($t(141) = 1.639, p = 0.103$), ethnicity ($F(4,138) = 0.944, p = 0.441$) or age ($r = -.03, p = .690$). We didn't find any gender differences in O ($t(140) = -0.086$,

Table 1
Description of Past Studies Reporting Relationships with MHW.

Authors	Year	Region	Sample size	Instruments used		R	Significance
				N**	MHW		
Andersen & Jensen	2012	Europe	8517	Mini-IPIP-FFM	21 Item	.15–.20*	Not reported
Filipkowski et al.	2010	US	432	PANAS	25 Item	.09**	<.001
Furnham et. al	2012	Europe	301	Abbreviated Big Five	28 Item	.107	ns
Furnham	2007	Not Reported	243	NEO-FFI Form S	28 Item & 40 Item	Not Reported	ns
Petrie et al.	2001	Europe	526	PANAS	25 Item	.23	<.001

* Andersen and Jensen (2012) reported that a number of constructs including N showed minor correlations with MHW followed by the above mentioned range. Exact correlation could not be elucidated.

** Filipkowski et al. (2010) reported a *b* instead of a *r*.

*** Neuroticism instrument names & sources: Mini-IPIP-FFM = Mini International Personality Item Pool–Five Factor Model measure (Donnellan, Oswald, Baird, & Lucas, 2006); PANAS = Positive and negative affect schedule (Watson, Clark, & Tellegen, 1988); Abbreviated Big Five (Mcmanus, Stubbings, & Martin, 2006); NEO-FFI Form S = NEO Five Factor Inventory – Self Report (Costa & McCrae, 1992).

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