



Does personality moderate the relationship between stress and health behavior? Expanding the nomological network of the five-factor model

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ABSTRACT

The present study tested the hypothesis that personality would moderate the stress to health behavior relationship. Using a community sample, 706 adults (Mean age = 37 years) were administered a set of five-factor model adjective rating scales, measures of stress and distress (i.e., negative life stress, physical symptom intensity, negative mood), health behaviors, as well as a demographic questionnaire. Using hierarchical multiple regression, Openness to Experience, Extraversion, and Neuroticism were found to moderate the stress to health behavior relationship. Supplementary analyses were conducted to determine if the five-factors would also moderate a life event to distress relationship. While several main effects were found, Conscientiousness was found to *buffer* the stress to distress connection. The factors that may influence both moderator models, suggestions for integration, and future research are discussed.

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1. Introduction

During the past 30 to 40 years, there has been a renewed and growing interest in the field of personality and health/illness (Watson & Hubbard, 1996). This reemergence was due in large part to the growing status of health psychology and behavioral medicine as separate disciplines. Advances in methodology (e.g., structural equation modeling: see e.g., Hoyle, 1995), findings that traditional risk factors have failed to fully account for the variability in illness outcome, and developments in theory and research on the Type A Behavior Pattern and Personality Hardiness also contributed (e.g., Wiebe & Smith, 1997). Despite the impressive wealth of data, several researchers have criticized the field for not paying enough attention to the conditions and/or mechanisms that influence the personality - stress to health status relationship (e.g., Wiebe & Smith, 1997). One such variable that will be examined in the present study focuses on the health practices or behaviors that an individual engages in such as exercise, a healthy diet, and smoking.

During the past few decades, several researchers have suggested that one's personal health practices are linked to several health outcome variables including coronary heart disease, all-cause mortality (Burke et al., 2007), physical health status (see Adler & Matthews, 1994), obesity, physical symptom severity, short-term disability, high cholesterol, high blood pressure, high glucose levels (Wang, Hausermann, Vounatsou, Aggleton, & Weiss, 2007), self-assessed health status, worry over health, chronic conditions, energy, physical condition, emotional status, restriction of activities (Segovia, Bartlett, & Edwards, 1991), and cancer survival (Rabin & Pinto, 2006).

Researchers have also found health behavior to be predicted by both stress and distress (e.g., Cohen et al., 1998; Nguyen-Michel, Unger, Hamilton, & Spruijt-Metz, 2006), as well as various personality traits including dominance, socialization, flexibility, introversion, conformity (Cook, Young, Taylor, & Bedford, 1998), and health locus of control (Saklofske, Austin,

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Galloway, & Davidson, 2007). Despite the support linking personality and stress independently to health behavior, researchers have tended to focus more on a main effects or mediational approach to understanding how the former are related to health behavior, often to the neglect of the stress-moderator approach. Just as personality may interact with stress to influence health status, it is conceivable that personality may modify the stress to health behavior relationship. For example, under high stress, one might speculate that optimists engage in more positive health practices relative to pessimists given the former's expectancy of success and use of problem-focused coping strategies (e.g., Scheier, Weintraub, & Carver, 1986). Theoretically, this would be consistent with the conceptualization developed by Adler and Matthews (1994). In their model, Adler and Matthews contend that personality influences health status through its impact on the social environment (e.g., life stress), through subsequent health practices, psychophysiological mechanisms, and finally, health status. Implicit within this model is personality's stress moderation effect on health behavior. Based on their theorizing, it would be reasonable to ask if personality also moderates this relationship, apart or in addition to its direct or main effect on health practices (Harakeh, Scholte, de Vries, & Engels, 2006).

To study the validity of these concerns, the present research will test whether an economical, yet comprehensive set of personality variables impact both stress and health behavior reports. One such personality model that has been the focus of much attention and debate over the past two and a half decades is the five-factor model (FFM). The FFM postulates that the structure of personality can be described by five superordinate, relatively orthogonal, and enduring individual difference factors (Digman, 1990; McCrae & Terracciano, 2005). Various terms, these factors are *Openness to Experience* (Experiential Style: ideas, creativity, actions, intellect, curiosity), *Conscientiousness* (Motivational Style: achieving, organized, organized, controlled, reliable), *Extraversion* (Interpersonal Style: positive emotions, active, dominant, sociable), *Agreeableness* (Interpersonal Style: warmth, kind, altruistic, trusting), and *Neuroticism* (Emotional Style: angry, low self-esteem, impulsive, depressed, anxious). As many psychologists have pointed out, the FFM not only represents a fundamental discovery for researchers interested in the phenotypic/genotypic variations underlying personality, it may also be of great importance in fostering our understanding of the stress – illness connection (e.g., Bakker, Van Der Zee, Lewig, & Dollard, 2006; Goldberg, 1993; Grant & Langan-Fox, 2006; Lemos-Giraldez & Fidalgo-Aliste, 1997; Marshall, Wortman, Vickers, Kusulas, & Hervig, 1994; Ozer & Benet-Martinez, 2006; Smith & Williams, 1992).

In summary, while much is known of those personality variables that moderate the stress to health relationship, little is known on whether a broad trait model (i.e., FFM) would moderate the stress to health practice relationship. This study will first test the following statistical model: $Y(\text{Health Behavior}) = X1(\text{Demographics}) + X2(\text{Stress}) + X3(\text{FFM}) + X4(X2 \times X3)$, where $X4$ reflects the interaction or moderator product term.

For the present study, stress will be operationalized using both stimulus (i.e., life events) and response (i.e., Distress = perceived physical symptoms + negative mood) definitions. While various life event measures have typically been used in tests of moderation, measures of distress have also been implemented in similar researches (e.g., Siegel, 1990). Part of this may be due to personality's relationship to the appraisal process. That is, personality may be influential within the contexts of primary appraisal (e.g., threat or challenge), secondary appraisal (e.g., health behavior coping), emotion/distress, and reappraisal contexts (Cohen & Edwards, 1989; Lazarus & Folkman, 1984). And last, health behavior will be operationalized as a composite variable.

Several predictions are offered. First, given their proneness to emotion-focused coping (e.g., Costa, Zonderman, & McCrae, 1991) and basic behavioral tendencies, individuals who score high on measures of neuroticism and stress will engage in fewer health practices than those who self-rate as less neurotic or emotionally stable. It is also expected that given their natural inclinations towards, for example, impulse control and planfulness, as well as their tendency to engage in problem-focused coping (Costa et al., 1991), conscientious individuals under high stress would be more likely to engage in healthier behaviors relative to those less conscientious (see e.g., Hampson et al., 2006; Tucker et al., 1995).

For extraversion, a counter-intuitive relationship is proposed. While it may be argued that extraverts would engage in more health behaviors under high stress, the opposite prediction is made. Given that extraverts have been shown to engage in various risk-related behaviors and that the composite measure of health behavior incorporates both preventive and risk-related behaviors, the following prediction is made: under high stress, extraverts will engage in fewer health behaviors than introverts. It is contended that at high stress levels, extraverts will have already reached an optimal level of arousal while introverts need to minimize beyond their optimal levels. To do this, introverts, given their tendencies toward self-restraint, will engage in more arousal reducing behaviors (e.g., exercise) while extraverts may modulate their behavior through some other mechanism(s): e.g., socializing).

Forth, those with a propensity towards agreeableness may put their own interests aside in favor of more altruistic behavioral tendencies. However, given their ability to self-regulate (Jensen-Campbell et al., 2002), their *warming* personality traits that may facilitate a reciprocal, activity based, and reinforcing social support network, it is suspected that when agreeable individuals are under high stress, such persons would engage in more health behaviors relative to those less agreeable.

It is more difficult to predict how open individuals would respond under high stress. While there is some evidence that openness is correlated with various types of stress, it is unclear what type of relationship with health behavior would emerge from a moderation analysis. For example, open individuals may be curious to engage in non-traditional behaviors, yet given high levels of stress become overly absorbed, focused and anxious, possibly resulting in behavioral disengagement. However, these effects may partly depend on the nature of the stressor (i.e., acute, chronic), the health behavior measure (i.e., composite vs. categorical vs. single behaviors), as well as the tendency towards atypical (e.g., naturopathic medicine), typical

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