



Concurrent and longitudinal relations among conscientiousness, stress, and self-perceived physical health



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ABSTRACT

In the present study we tested the inoculation hypothesis of the effect of conscientiousness on health. We tested the inoculation hypothesis using both cross-sectional and longitudinal methods. We used a representative sample of US citizens ($N = 2136$ for Wave 1 and $N = 1170$ for Wave 2), which completed the Chernyshenko Conscientiousness Scales, Perceived Stress Scale, and SF-36 measure of physical health twice over a three-year period. Stress partially mediated the relation between conscientiousness and health. Changes in conscientiousness were related to changes in stress over time and changes in stress partially mediated the association between changes in conscientiousness and changes in self-reported health. The relevance of stress to the conscientiousness–health relation is discussed.

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1. Introduction

Conscientiousness is characterized as the propensity to follow socially prescribed norms regarding impulse control, to be planful, goal directed, and able to delay gratification (Roberts, Jackson, Fayard, Edmonds, & Meints, 2009). The family of traits contained within the category of conscientiousness is positively related to physical health and longevity (Israel et al., 2014; Chapman, Lyness, & Duberstein, 2007; Lodi-Smith et al., 2010). Given that a reliable relation has been found between conscientiousness and physical health, researchers have turned to investigate the mechanisms through which conscientiousness impacts physical health. Recent research suggests that conscientiousness influences health through either implementation or inoculation factors (Hill, Nickel, & Roberts, 2013). Implementation factors are the positive psychological or social environmental consequences of conscientiousness that lead to better health, such as higher life satisfaction or more stable marriages. Inoculation factors are the negative psychological or social environmental consequences on health that people high on conscientiousness successfully avoid, such as negative affect, stress, or counterproductive work behaviors that may lead to various forms of psychopathology or problematic negative life events, such as job loss and divorce.

Previous research which has examined the mechanisms between conscientiousness and physical health has mainly focused on implementation factors, such as education and positive health behaviors (e.g., Hampson, Goldberg, Vogt, & Dubanoski, 2007). Few studies have examined the role of inoculation factors – ways of avoiding negative behaviors that, in turn, have negative consequences for health. Furthermore, few studies have examined the interplay of conscientiousness and negative factors, such as stress, over time in a longitudinal design. The present study examined the avoidance of stress as a potential inoculation mechanism, which may also help explain the relation between conscientiousness and self-perceived physical health. We focused primarily on the intersection of these three variables over time in a 3-year longitudinal study, which also afforded us the opportunity to test dynamic forms of all three variables and to test whether changes in stress mediated the relation between changes in conscientiousness and changes in self-perceived physical health.

1.1. Health behavior models and the role of stress in the link between conscientiousness and physical health

The prototypical theoretical perspective on the role of stress in the health process is as a mediator of broad personal or background factors on physical health itself (Fig. 1; Bogg & Roberts, 2013). Health behavior models are structured such that individual differences and background factors are seen as causal antecedents to the health process. The health process plays out over time as a consequence of both behavioral choices and physiological

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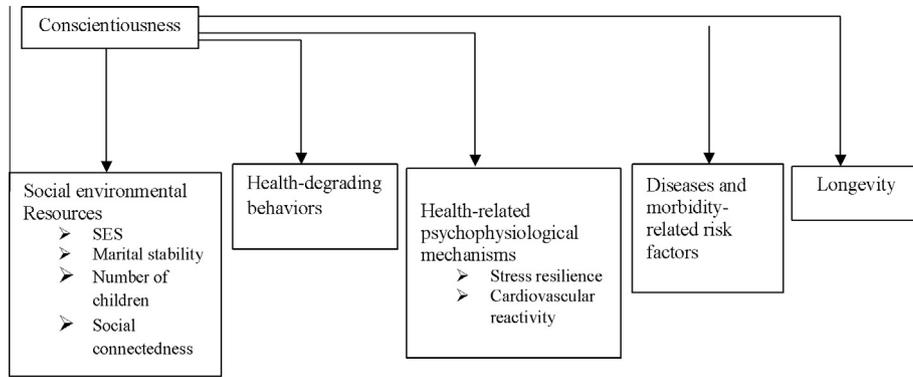


Fig. 1. Schematic representation of conscientiousness–health relations, modified from the health process model in Bogg and Roberts (2013).

reactions that result from these individual differences and background factors. Choosing different behaviors can lead to poorer or better health through the direct, health-relevant consequences of those behaviors. For example, smoking tobacco leads directly to many different forms of morbidity, such as cancer and cardiovascular disease. Alternatively, individual differences can lead to various forms of physiological dysfunction either because of health behavior choices or because of the individual difference factor itself. For example, conscientiousness is known to predict decreased inflammation, which is implicated in increased likelihood of cardiovascular events (Israel et al., 2014).

Within the context of the Bogg and Roberts (2013) health behavior model, stress is conceptualized as a result of low conscientiousness that then leads to poor health outcomes. Stress in this case is seen as a proxy for psychophysiological dysregulation that would lead to poor health outcomes over the long run. We use this model, which assumes stress as a mediating mechanism, as a guide to test the inter-relations of conscientiousness, stress, and health in the present study. For these assumptions to be correct not only would conscientiousness have to be related to stress, but stress should also be related to health. We review each aspect of these assumed pathways below.

1.1.1. Relationships among conscientiousness, stress, and physical health

A number of studies have shown that self-reports as well as observer reports of conscientiousness are positively related to self-reported physical health (Lodi-Smith et al., 2010). In a study that examined several pathways leading to illness, conscientiousness was found to be the best predictor of illness burden even when controlling for education, substance abuse, hypertension, and cholesterol (Chapman et al., 2007). Goodwin and Friedman (2006) found conscientiousness to be negatively related to chronic illnesses like diabetes, high blood pressure, arthritis, skin problems, strokes, ulcers, and tuberculosis. Conscientiousness was also reported to predict slower disease progression in patients with HIV (O’Cleirigh, Ironson, Weiss, & Costa, 2007). Lower conscientiousness and its facets were also found to be associated with greater chronic disease burden and an increased risk of disease severity (Sutin, Zonderman, Ferrucci, & Terracciano, 2013). In a study that examined how observer reports of young adults’ personality traits could predict health risk as they entered midlife, individuals scoring low on conscientiousness developed poorer health even after accounting for preexisting differences in education, socioeconomic status, smoking, obesity, self-reported health, medical conditions, and family medical history (Israel et al., 2014). Conscientiousness appears to be the most consistent personality trait predictor of better physical health and longevity.

Conscientiousness has also been linked to stress. The process of stress involves stimuli which are commonly referred to as stressors, an appraisal of the stressors, and a response (Cohen, Kessler, & Gordon, 1995). Specifically, stressors can include dramatic events, severely taxing situations and daily hassles which are annoying practical problems that to some degree characterize everyday transactions with the environment (Kanner, Coyne, Schaefer, & Lazarus, 1981). Both types of stressors are assessed by the appraisal process includes two dimensions: primary and secondary appraisals (Lazarus & Folkman, 1984). Primary appraisal is the evaluation of the individuals’ stake in the situation which reflects the rating of stressors, while secondary appraisal is the evaluation of the resources and options to cope with stressors (Lazarus, 1991). In primary appraisal, stressors can be evaluated as challenges or threats. When a person appraises that the demand of stressors as uncontrollable and exceeds the available resources to cope with, the stressors will be perceived as threats (Lazarus & Launier, 1978). When a person appraises the stressors as demanding but still manageable based on the judgment of the availability of resources to cope with, and there is potential for mastery and personal growth, the stressors will be perceived as challenges (Lazarus & Folkman, 1984). In this paper, we used the term “stress” to refer to the psychological state people experience when stressors were perceived as unmanageable threats.

Conscientiousness appears to be a protective factor against both stressful experiences and subjective stress (Murphy, Miller, & Wrosch, 2013; Penley & Tomaka, 2002). In a study about the effect of conscientiousness on people’s appraisals of daily stressors, total conscientiousness and several facets predicted positive associations with primary and secondary appraisals of stress (Gartland, O’Connor, & Lawton, 2012). Specifically, the order and industriousness facets of conscientiousness were related to ratings of having a greater stake in daily hassles while higher responsibility was related to greater confidence in one’s ability to cope with daily stressors. In a study of HIV patients, conscientiousness was negatively associated with perceived stress and positively associated with active coping (O’Cleirigh et al., 2007). Also, higher conscientiousness was shown to correlate with lower perceived stress during vacation (Besser & Shackelford, 2007) and enhanced cortisol response to the stressor of public speaking (Garcia-Banda et al., 2011). In a study which also focused on conscientiousness and its facets, higher self-discipline was found to be associated with fewer daily hassles (O’Connor, Conner, Jones, McMillan, & Ferguson, 2009).

Stressful events and the subjective experience of stress also have been found to be strong predictors of one’s health condition (Cohen & Williamson, 1991). For example, experiencing more negative life events was significantly related to mortality (Lantz, House, Mero, & Williams, 2005). Also, chronic financial stress

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