



The role of neuroticism on psychological and physiological stress responses[☆]

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Abstract

This study examined the influence of personality on stressor appraisals and emotional, physiological, and behavioral responses to psychosocial stress. Appraisals were used to classify participants as threatened (they believed their coping resources were inadequate relative to stressor demands) or challenged (they believed their coping resources were commensurate with stressor demands). Neuroticism predicted threat appraisals, and both were related to negative emotional experience and poor task performance. The influence of neuroticism on negative emotions and poor performance was mediated by threat appraisals. High neuroticism confers stress vulnerability, but only when conditions are construed as threatening.

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According to Lazarus, the stress process begins with the construal, or appraisal of an event as an imposition (Lazarus, 1999; Lazarus & Folkman, 1984). People appraise situations differently making some more vulnerable to poor stress outcomes (Basic Behavioral Science Task Force of the National Advisory Mental Health Council (BBSTF), 1996; Blascovich & Tomaka, 1996; Vollrath & Torgersen, 2000). Stressor appraisals result in threat when persons construe they have inadequate resources to offset external demands, or challenge when adequate resources are thought to be available (Lazarus & Folkman, 1984). Threat and challenge appraisals evoke different physiological responses (Blascovich & Tomaka, 1996; Tomaka & Blascovich, 1994; Tomaka, Blascovich, Kelsey, & Leitten, 1993), and are expected to relate to different emotional responses (Lazarus, 1991; Lazarus & Folkman, 1984). The latter proposition has not been examined fully. Moreover, stable psychological factors, like personality, may confer consistency to ap-

praisals and their sequelae across stressors. This stability could make some more vulnerable to negative stress outcomes than others. This study examined the influence of personality on multiple responses to psychosocial stress.

Using Lazarus's model of stress, Blascovich, Tomaka, and colleagues have found cardiovascular markers of threat and challenge appraisals (Tomaka et al., 1993, 1997). The stressors employed have been active coping tasks, typically mental arithmetic. Tomaka et al. (1993, Study 2) had participants rate how threatening the math task was going to be and their ability to cope with it. A median split of a ratio of these two items (demands/ability) created threat and challenge groups. Threatened participants had a modest increase in cardiac output (CO; the volume of blood pumped out of the heart over time) coupled with increased total peripheral resistance (TPR; the resistance of the peripheral vasculature) relative to challenged participants. Threatened participants had more blood pumped into a more resistant vasculature, suggestive of withdrawal. Challenged participants had increased CO coupled with decreased TPR; more blood was pumped into an amenable vasculature. This suggests greater utilization of energy resources (Obrist, 1981), which facilitates approach. In

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addition, threatened participants were outperformed on the math task by those challenged. The present study was conducted independently of Blascovich and colleagues, and aimed to replicate these physiological and performance findings as well as to expand on them in important ways.

The present study investigated the influence of personality on the stress process. Personality was broadly defined, rather than choosing one of a myriad of potentially relevant individual differences variables. Past research has examined the tendency for people to hold just world beliefs (JWB) in relation to stressor appraisals and physiological responses (Tomaka & Blascovich, 1994). Those high in JWB were more challenged, had increased cardiac responding, and performed better than those low in JWB. This suggests that person variables associated with challenge are associated with its physiological response pattern. However, it is unclear whether appraisals mediated the effects of high JWB on cardiac responding. Tomaka et al. (1999) examined potential mediators of the effects of assertiveness on stress responses. Women higher in assertiveness were more challenged, had the correspondent autonomic pattern, and performed better than those low in assertiveness. The influence of assertiveness on coping ability was partially mediated by personal efficacy, suggesting that assertiveness is linked partly to coping through high efficacy beliefs. These studies suggest that person variables influence appraisals and other stress responses, with the latter study demonstrating that these responses may be mediated partly through one aspect of appraisals (coping efficacy).

Personal beliefs have been considered important predictors of stressor appraisals (Lazarus & Folkman, 1984), but personality may also capture variability in stress responses (Lazarus, 1999). There is no consensus, but many researchers believe that personality is a relatively stable collection of traits that can be captured by five broad dimensions (John & Srivastava, 1999; McCrae & Costa, 1999). McCrae and Costa (1999) suggest that these five dimensions comprise basic, dynamic tendencies that operate between experience and action, fostering consistency in reactions to the environment. Neuroticism constitutes the tendency toward emotional distress (e.g., nervousness, hopelessness, and guilt). People higher in neuroticism should have more frequent and more intense experiences of distress. Neuroticism is thought to be particularly important in intensifying stress reactivity and leading to greater stress vulnerability (Suls, 2001). Extraversion implies an energetic approach to companionship and stimulation, along with positive emotionality. Both companionship needs and positive emotionality should confer benefits when those high in extraversion are distressed. Openness to experience describes a need for variety, novelty, and change in mental experiential life. Distressing experiences might be

approached with less trepidation for those high in openness. Conscientiousness signifies a strong sense of purpose, high levels of aspiration, and self-control. The sense of purpose and self-control might confer well-being. Finally, agreeableness embodies a trusting and prosocial orientation toward others. These dimensions of personality may account for some variability in stress responses (BBSTF, 1996).

The relation of personality with psychological stress outcomes has been examined. Neuroticism has been related to reports of more work and non-work hassles, but not uplifts, whereas extraversion was related to more uplifts and less non-work hassles, but not work hassles (Wearing & Hart, 1996). The findings suggest the two dimensions may affect stressor construals. The Big Five have also been examined in relation to primary appraisals and coping (Shewchuk, Elliott, MacNair-Semands, & Harkins, 1999). Neuroticism was related to emotion-focused coping and conscientiousness to problem-focused coping, but neither was related to appraisals. However, Penley and Tomaka (2002) found conscientiousness was related to less threat. Relationships among personality and coping were also found. Neuroticism was related to feeling worse about coping ability, whereas extraversion was related to feeling better about coping. Openness and conscientiousness were related to perceiving fewer demands and reporting greater coping capacity.

Along with personality, situation-level variables, such as appraisals, can affect a host of stress reactions (Lazarus & Folkman, 1984; Lazarus, 1991). Stressor appraisals likely foster differences in emotional responses, autonomic responses, and coping (Fischer, Shaver, & Carnochan, 1990; Lazarus & Folkman, 1984). Although there are physiological markers for challenge and threat, as demonstrated by Blascovich and colleagues, research on affective consequences is lacking. Challenge appraisals are thought to be accompanied by feelings of competence and positive affect toward demanding situations (Lazarus, 1991), which should enhance performance. The effects of personality and appraisals on emotional responses were examined in the present study, using both self-report and physiological affective indexes.

This study addressed limitations of past research by examining person variables across the stress process as a stressor is met and that process unfolds, and by examining the domain of personality and affective reactions. The current study examined the influence of personality on stress responses across multiple levels of analysis: psychological, physiological, and behavioral. Mediators of personality on stress responses were also examined, where appropriate. It was predicted that personality would influence appraisals and they, in turn, would predict unique affective responses, cardiovascular patterns, and performance outcomes. Specifically, neuroti-

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