



The mediating effect of appraisal on the relationship between neuroticism and coping during an anagram-solving task: A goodness-of-fit hypothesis perspective

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ABSTRACT

Using the goodness-of-fit hypothesis as a theoretical rationale, the current study examined whether stressor appraisals mediate the relationship between neuroticism and coping strategy use in the context of an anagram-solving task. One hundred and eight undergraduate students (65 female; 43 male) completed a neuroticism scale, attempted an anagram-solving task, and then completed brief measures of task appraisal and situational coping. In accordance with the goodness-of-fit hypothesis, appraised controllability was negatively correlated with both avoidance and emotion-focused coping; however the predicted positive correlation with task-focused coping was not obtained. Consistent with previous research, neuroticism was positively correlated with appraisals of how stressful the task was perceived to be and negatively associated with appraisals of task controllability. As predicted, neuroticism was positively associated with both emotion-focused and avoidance coping during the anagram-solving task. Moreover, the relationship between neuroticism and emotion-focused coping was fully mediated by appraised stress and appraised controllability, and the relationship between neuroticism and avoidance coping was fully mediated by appraised stress. These findings highlight the importance of measuring stressor appraisals when examining individual differences in situational coping and have implications for research on coping intervention.

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1. Introduction

Neuroticism, a personality trait associated with an increased likelihood of experiencing negative emotions such as anxiety and depression (Costa & McCrae, 1992), has been consistently associated with both subjective reports of stress symptoms and the occurrence of stressful life events – even when these events are objectively defined (Ebstrup, Eplov, Pisinger, & Jorgensen, 2011; Magnus, Diener, Fujita, & Pavot, 1993). One potential explanation for this is that neuroticism is generally associated with a reliance on passive and maladaptive coping strategies (Vollrath & Torgersen, 2000). Coping can be defined as cognitive and behavioural efforts to manage demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984). Central to this definition is the notion of appraisal; essentially a situation can only be considered stressful if it is perceived to be stressful by the given individual. Additionally, from this perspective the coping process is conceptualised as being a dynamic interplay between the person

and the stressful situation (O'Brien & DeLongis, 1996). Naturally, this has led to a substantial body of research exploring the role of personality traits in the coping process (Vollrath & Torgersen, 2000). Due to its association with both stress symptoms and stressful life-events, neuroticism has received particular attention in the research literature, and is the focus of the current study.

Neuroticism has consistently been linked with both appraisals of stressful situations and coping in the context of these situations. Specifically, individuals who score highly in neuroticism are reported to appraise ambiguous situations in a negative or threatening manner, and are therefore more likely to perceive threats where others do not (Costa & McCrae, 1987; Matthews & Campbell, 2010; Matthews et al., 2006; Schneider, 2004). This is consistent with a body of literature suggesting that trait anxiety (with which neuroticism is highly correlated) is associated with a negative interpretive bias in processing ambiguous information (MacLeod & Cohen, 1993). Research examining coping strategy use consistently reports that neuroticism is positively correlated with maladaptive emotion-focused and avoidant coping strategies (Vollrath & Torgersen, 2000), such as disengagement, wishful-thinking, escape-avoidance, and emotional venting. Neuroticism is also negatively associated with more effective and direct coping strategies, often referred to as problem or task-focused coping (Bouchard, 2003; David & Suls, 1999; O'Brien & DeLongis, 1996;

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Penley & Tomaka, 2002; Vollrath & Torgersen, 2000). Importantly, recent findings suggest that these neuroticism-related differences in appraisal and coping can also be obtained in the context of laboratory and performance tasks in which participants all experience exactly the same objective stressor (e.g. vigilance, working memory, and anagram-solving tasks), thereby minimising the likelihood that contextual differences account for the individual differences in appraisal and coping (Boyes & French, 2009, 2010; Matthews & Campbell, 2010; Matthews et al., 2006; Shaw et al., 2010).

The goodness-of-fit hypothesis (Lazarus, 1993; Lazarus & Folkman, 1984) provides a potential rationale for the link between neuroticism and the use of generally passive and maladaptive coping strategies. The goodness-of-fit hypothesis emphasises the importance of the match between an individual's coping efforts and characteristics of the specific stressful situation. Essentially it is argued that task-focused coping strategies should be used more frequently in controllable situations, where there are more opportunities to actually change the circumstances or have an impact on the stressful event. In contrast, avoidance and emotion-focused strategies should be more frequently used in less controllable situations, which by definition allow less change of the circumstances of the stressful situation (Lazarus, 1993; Lazarus & Folkman, 1984; Park, Armeli, & Tennen, 2004; Park, Folkman, & Bostrom, 2001; Park, Sacco, & Edmondson, 2012; Zeidner & Saklofske, 1996). From this perspective, it is possible that because individuals who score high in neuroticism tend to appraise stressful situations as being more threatening and less controllable, they therefore engage in more emotion-focused and avoidant coping and less task-focused coping.

The aim of the current study was to test empirically the hypothesis that stressor appraisals mediate relationships between neuroticism and coping strategy use. An anagram-solving task, which has been employed previously to examine neuroticism-related differences in stressor appraisal and coping (Boyes & French, 2010), was used as a controlled laboratory-stressor. Laboratory-stressors minimise contextual confounds, thereby allowing individual differences in appraisal and coping to be measured (Boyes & French, 2009). However, accumulating evidence suggests that laboratory paradigms which employ unambiguously threatening stimuli (referred to as *strong situations*) are not optimal for examining individual differences, as they generally elicit uniform reactions (Lissek, Pine, & Grillon, 2006). Also, the cognitive bias literature has identified anxiety-linked biases specific to the processing of ambiguous information (MacLeod & Cohen, 1993). Therefore, in order to ensure maximum scope for individual differences in task appraisal, a mild-stress version of the anagram-solving task was used in the current study (see method section for a description of the task).

The following hypotheses were proposed. First, in accordance with the goodness-of-fit hypothesis (Lazarus & Folkman, 1984), appraised controllability of the task was predicted to be negatively correlated with avoidance and emotion-focused coping and positively correlated with task-focused coping. Second, neuroticism was hypothesised to be associated with negative appraisals of the anagram-solving task. Third, neuroticism was predicted to be positively associated with avoidance and emotion-focused coping and negatively associated with task-focused coping during the task. Finally, it was predicted that neuroticism-related differences in appraisal would mediate relationships between neuroticism and coping strategy use during the task.

2. Method

2.1. Participants

One hundred and eight undergraduate students (65 female; 43 male) took part in the study. Ages ranged between 18 and 30 years

($M = 20.99$, $SD = 2.32$). The gender ratio of the sample reflected the gender breakdown of the undergraduate psychology population and first year students gained academic credit in exchange for participating in the study.

2.2. Measures

2.2.1. Anagrams

Tresselt and Mayzner (1966) provide normative solution times for a sample of 134 words and 378 associated anagrams. Participants attempted to solve six anagrams (with median solve times of 31 s or less), were given as long as they required to solve the anagrams, were provided with pen-and-paper to assist them in the task, and could complete the anagrams in any order they wished. All anagrams had only a single correct solution and participants were shown the solutions after completing the task.

2.2.2. Neuroticism

A 10 item neuroticism scale compiled from the International Personality Item Pool (Goldberg et al., 2006) was used. Items employed a five point response scale (0: *Very inaccurate*; 4: *Very accurate*). The scale has good internal consistency ($\alpha = .86$; Goldberg et al., 2006) and correlates highly with other neuroticism measures ($r = .84$ with the NEO-FFI neuroticism subscale; Gow, Whiteman, Pattie, & Deary, 2005).

2.2.3. Appraisal

A five item scale was used to measure participants' appraisals of the anagram-solving task (Boyes & French, 2010). Three items assessed participants' stress appraisals (e.g. "How stressed did you feel during the anagram task?" $\alpha = .92$) and two items measured perceived control (e.g. "To what extent do you think that the task is manageable?" $\alpha = .78$). These items employed an 11 point response scale (0: *Not at all*; 10: *Extremely*).

2.2.4. Coping

The situational version of the Coping Inventory for Task Stressors (CITS-S; Matthews & Campbell, 1998) was used for post-task assessment of coping. It consists of task-focused (e.g. "I worked out a strategy for successful performance"), emotion-focused (e.g. "I became preoccupied with my problem"), and avoidance (e.g. "I stayed detached or distanced from the situation") coping subscales. Internal consistencies range between .84 and .86 (Matthews & Campbell, 1998). Each sub-scale contains seven items usually responded to on a five point response scale (0: *Not at all*; 4: *Extremely*); however, in the current experiment the response scale was extended (0: *Not at all*; 10: *Extremely*, Boyes & French, 2009).

2.3. Procedure

The procedures for this study were approved by the Human Research Ethics Committee at the University of Western Australia. Participants completed the study individually and they were informed that the experiment aimed to assess relationships between personality and language ability. After giving consent participants completed the personality items then attempted the anagram-solving task. Immediately after the final anagram they completed the appraisal scale and the CITS-S. At the end of the session all participants were thoroughly debriefed as to the actual purpose of the study.

3. Results

Mean neuroticism, appraised stress, control appraisal, task-focused, emotion-focused, and avoidance coping scores, as well as

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