

RUNNING HEAD: Neuroticism, stress and coping during an anagram-task

Neuroticism, Stress, and Coping in the Context of an Anagram-Solving Task

Mark E. Boyes & Davina J. French

Citation:

Boyes, M. E. & French, D. J. (2010). Neuroticism, stress, and coping in the context of an anagram-solving task. *Personality and Individual Differences*, 49 (5), 380-385.

NOTICE: this is the author's version of a work that was accepted for publication in *Personality and Individual Differences*. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version was subsequently published in *Personality and Individual Differences*, [Volume 49, Issue 5, 2010] DOI: 10.1016/j.paid.2010.04.001.

Abstract

Research examining the relationship between neuroticism and coping has been limited by reliance on dispositional coping measures and/or retrospective reporting with long time-lags. The current experiment evaluated an anagram-solving task as a laboratory-stressor with which to examine neuroticism-related differences in situational coping. One hundred and twenty-four participants (with neuroticism scores in the top or bottom quartiles) were assigned to one of two conditions across which anagram difficulty and level of controllability were manipulated. Individuals in the High-Stress condition solved fewer anagrams, appraised the task more negatively, reported lower mood and self-esteem, and engaged in more emotion-focused and less task-focused coping than individuals in the Mild-Stress condition. High-neuroticism participants engaged in more emotion-focused and avoidance coping than low-neuroticism participants regardless of which condition they were assigned to. In the Mild-Stress condition, high-neuroticism participants engaged in less task-focused coping than low-neuroticism participants. No neuroticism-related difference in task-focused coping was obtained in the High-Stress condition. It is concluded that 1) the anagram-solving task is a promising laboratory-stressor with which to examine individual differences in appraisal and coping, and 2) neuroticism is associated with task-focused, emotion-focused, and avoidance coping in the context of this task, which overcomes limitations of previous research in this area.

Coping, Appraisal, Neuroticism, Anagrams, Cognitive Performance

Coping can be defined as cognitive and behavioural efforts to manage demands that are appraised as taxing the resources of the person (Lazarus & Folkman, 1984). An important feature of this perspective is that the coping process unfolds in an interplay between the person and the stressful situation (O'Brien & DeLongis, 1996). This has led researchers to explore the role of personality-related variables in the coping process (Vollrath & Torgersen, 2000). In particular, neuroticism has received much attention (Watson & Hubbard, 1996) and is the focus of this experiment.

Neuroticism is a personality-trait associated with an increased likelihood of experiencing negative emotions such as anxiety and depression (Costa & McCrae, 1987). Neuroticism is associated with subjective reports of stress-symptoms, the occurrence of stressful life-events (Magnus, Diener, Fujita, & Pavot, 1993), and has been linked with both appraisals of stressful situations and coping in the context of these situations. High-neuroticism individuals are thought to appraise ambiguous situations in a negative or threatening manner, and are therefore more likely to see threats where others do not (Costa & McCrae, 1987; Schneider, 2004). Additionally, research examining coping strategy use reports that neuroticism is positively correlated with maladaptive emotion-focused and avoidant coping strategies, such as disengagement, wishful-thinking, escape-avoidance, and emotional-venting. Neuroticism is negatively associated with more effective and direct coping strategies, often referred to as problem/task-focused coping (Bouchard, 2003; McCrae & Costa, 1986; O'Brien & DeLongis, 1996).

Although the relationships between neuroticism, appraisal, and coping have been widely replicated, and are consistent with a personality-type characterized as prone to experiencing negative emotions, these findings have important methodological

limitations. Researchers typically use one of two methodologies to measure coping: 1) participants are asked how they *generally* cope with stressful situations; or 2) participants are asked to recall coping efforts in relation to the most stressful event experienced in up to the last year (David & Suls, 1999). Indeed, over 80% of papers published between 1980 and 2004 used dispositional or retrospective methodologies to measure coping (Connor-Smith & Flachsbart, 2007). These methodologies may overestimate the relationships between personality-traits and coping in the context of any given stressful situation (David & Suls, 1999).

It has therefore been argued that examining neuroticism, appraisal, and coping in the context of specific stressors, where reporting time-lags can be minimised, would allow firmer conclusions regarding relationships between personality, appraisal, and coping to be made (Bolger, 1990). Furthermore, neuroticism-related differences in coping may best be identified through the use of experimental stressors, as presenting the same objective stressor to all participants minimizes confounds and allows for immediate self-reports of appraisal and coping (Connor-Smith & Flachsbart, 2007). Although the integration of observational and experimental personality research was called for as early as 1966 (H. J. Eysenck, 1966), experimental approaches to the study of personality are rare. (Revelle & Oehlberg, 2008). The current study aims to use a laboratory-stressor, which can be experimentally manipulated, to examine links between personality, appraisal, and coping behaviour.

Recently, Matthews and colleagues (2006) reported positive relationships between neuroticism, emotion-focused, and avoidance coping in a number of laboratory-tasks (including rapid information processing, mental arithmetic, and solving impossible

anagrams). Neuroticism was also negatively correlated with task-focused coping. These findings are consistent with previous research, and are a promising start in examining the link between neuroticism and coping in the context of laboratory-tasks. Similarly, Endler, Macrodimitris, and Kocovski (2000) used an anagram-solving task in which control was manipulated, to examine stressor appraisals, situation-specific coping, and the goodness-of-fit hypothesis. According to the goodness-of-fit hypothesis stressor controllability influences coping strategy choice (Park, Armeli, & Tennen, 2004). This hypothesis posits that if stressors are controllable individuals will engage in more task/problem-focused coping. If stressors are uncontrollable individuals will engage in more avoidance/emotion-focused coping (Zeidner & Saklofske, 1996). Additionally, using situationally-appropriate coping strategies is argued to be associated with more adaptive outcomes (Park, et al., 2004). Using the anagram-solving task Endler and his colleagues (2000) obtained support for the goodness-of-fit hypothesis; however, as yet, this task has not been used to examine personality-related differences in coping.

For a number of reasons an anagram-solving task appears an ideal experimental-stressor with which to examine neuroticism-linked differences in appraisal and coping. Firstly, the anagram-solving task represents a controlled stressor in which participants are faced with the same scenario. This should provide clarity in interpreting individual differences in appraisal and coping. Secondly, by responding to measures immediately after completing the anagram-solving task the limitations of dispositional measurement are overcome, and the time-lag associated with previous retrospective coping studies is minimised.

This experiment had two aims. The first aim was to evaluate the utility of the anagram-solving task as an experimental stressor. Anagram difficulty and level of control were manipulated across two experimental conditions. It was predicted that if the anagram-solving task is a good experimental stressor, then when compared with participants in the Mild-Stress condition, participants allocated to the High-Stress condition should appraise the task more negatively, experience a negative affective response (specifically lowered mood and self-esteem, Boyes & French, 2009), and use theoretically predicted coping strategies. Specifically, given the manipulation of control (and in accordance with the goodness-of-fit hypothesis) it was predicted that participants in the High-Stress condition would engage in more emotion-focused and avoidance coping, and less task-focused coping, than participants in the Mild-Stress condition.

The second aim of the experiment was to determine if neuroticism-linked differences in appraisal, affective state, and coping could be obtained in the context of this task. When compared to low-neuroticism participants, high-neuroticism participants were predicted to appraise the anagram-solving task more negatively; report worse mood and lower self-esteem; and engage in less task-focused coping and more emotion-focused and avoidance coping, regardless of which condition they were assigned to. Additionally, personality traits are more likely to be associated with stress reactivity and performance when the demands of the task are sufficiently high to force the individual to allocate compensatory effort and leave fewer resources available for ongoing self-regulatory processes (Hancock & Warm, 1989; Szalma, 2008). Neuroticism was therefore predicted to interact with Condition such that neuroticism-linked differences in

appraisal, affective state, and coping would be more pronounced in the High-Stress condition.

Method

Participants

Two hundred and eighty-seven undergraduate students completed a neuroticism measure and the top and bottom quartiles were invited to participate in the experiment. One hundred and twenty-four participants (73 females; 51 males) took part in the experiment (mean age = 21.45 years). Approximately equal numbers of high-neuroticism ($n = 64$, mean neuroticism score = 26.68) and low-neuroticism ($n = 60$, mean neuroticism score = 10.66) participants were recruited. Participants were randomly allocated to either a Mild-Stress ($n = 65$) or High-Stress ($n = 59$) condition.

Materials

Anagrams

Anagrams were sourced from Tresselt and Mayzner (1966), who provide normative solution times for a sample of 134 words and 378 associated anagrams. All anagrams were presented on paper. The study had two experimental conditions. Individuals allocated to the Mild-Stress condition attempted six anagrams with median solve times of 31 seconds or less. In an attempt to maximise perceived control participants in this condition 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. Individuals allocated to the High-Stress condition attempted six anagrams with median solve times of 120 seconds or more. In order to minimise perceived control, participants in this condition were given 30 seconds to solve the anagrams, were not allowed to use pen-and-paper, and had to complete the anagrams in the order provided. All anagrams had only a single correct solution and in High-Stress condition participants were shown the solution before proceeding to the next anagram. In the Mild-Stress condition participants were shown the solutions after completing all anagrams.

Neuroticism

A 10-item neuroticism scale compiled from the International Personality Item Pool (Goldberg et al., 2006) was used to screen potential participants. Items were responded to on a five-point scale (0: *Very inaccurate*; 4: *Very accurate*). The scale has an internal consistency of .86 (Goldberg, et al., 2006) and correlates highly with other neuroticism measures (e.g. a correlation of .84 with the NEO-FFI neuroticism subscale; Gow, Whiteman, Pattie, & Deary, 2005).

Anagram Appraisal Scale

A five-item scale was constructed to measure participants' appraisals of the anagram-solving task. 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. 'Would you agree that the anagram task is manageable?', $\alpha = .78$). Items were responded to on an 11-point scale (0: *Not at all*; 10: *Extremely*). A principal

components analysis (oblique rotation) revealed that the two predicted components accounted for 85.84% of the overall variance.

Mood

The Mood Adjective Checklist (MACL; Matthews, Jones, & Chamberlain, 1990) measures three bipolar dimensions: energetic arousal (vigorous vs. tired; $\alpha = .83$), tense arousal (nervous vs. relaxed; $\alpha = .88$), and hedonic tone (pleasant vs. unpleasant mood; $\alpha = .88$). Items are usually responded to on a four-point scale (*1: Definitely; 4: Definitely not*); however, in the current experiment the response-scale was extended (*0: Definitely; 10: Definitely not*, Boyes & French, 2009). Reliabilities for the MACL subscales in the current sample ranged between .84 (energetic arousal) and .94 (hedonic tone).

Self-Esteem

The Rosenberg Self-Esteem scale (RSES; Rosenberg, 1965) consists of 10 items that are summed to give a total score. Extensive reliability and validity data exist for the RSES (Blascovich & Tomaka, 1991). The RSES is usually responded to on a four-point scale (*1: Strongly agree; 4: Strongly disagree*); however, in the current experiment the response-scale was extended (*0: Strongly agree; 10: Strongly disagree*, Boyes & French, 2009). Reliability of the RSES in the current sample was .89.

Coping Inventory for Task-Stressors (Situational Version, CITS-S)

The CITS-S (Matthews & Campbell, 1998) was used for immediate post-task assessment of coping. It consists of task-focused (I worked out a strategy for successful

performance), emotion-focused (I became preoccupied with my problem), and avoidance (I stayed detached or distanced from the situation) coping sub-scales. Internal consistencies range between .84 and .86 (Matthews & Campbell, 1998). The sub-scales contain seven items responded to on a five-point 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). Reliabilities for the CITS-S subscales in the current sample ranged between .74 (avoidance coping) and .93 (emotion-focused coping).

Procedure

Participants were informed that the experiment aimed to assess relationships between personality and language ability. After giving consent participants were randomly allocated to the Mild or High-Stress condition. Once the anagram-solving task was finished, participants completed the MACL, RSES, Anagram Appraisal Scale, and CITS-S. After completing all measures participants were debriefed as to the actual purpose of the experiment.

Results

No difference in mean neuroticism score was obtained between individuals assigned to the Mild-Stress (mean = 18.42) and High-Stress (mean = 19.44) conditions; $F(1, 122) = .41, p = .522$. Given the sample contained more females than males and that gender differences in neuroticism have been reported (Hankin & Abramson, 2001), gender was entered as a covariate in all analyses. An ANCOVA was conducted in order

to examine the number of anagrams solved correctly as a function of Condition and Neuroticism Level. A series of MANCOVAs were conducted in order to examine appraisal, mood and self-esteem, and coping as a function of Condition and Neuroticism Level. Bonferroni correction was implemented to set critical α level for all univariate analyses. Due to missing data degrees of freedom vary across analyses.

Number of Anagrams Solved Correctly

The number of anagrams solved by high and low neuroticism participants in both anagram conditions is summarized in Table 2. After controlling for gender, participants assigned to the Mild-Stress condition solved significantly more anagrams than participants assigned to the High-Stress condition, $F(1, 113) = 233.42, p < .001$, partial $\eta^2 = .67$. The effect of Neuroticism Level; $F(1, 113) = 1.43, p = .235$, partial $\eta^2 = .01$; and the interaction between Condition and Neuroticism Level, $F(1, 113) = 1.22, p = .271$, partial $\eta^2 = .01$; were not statistically significant.

Table 1 (all tables and figures are appended to this manuscript)

Appraisal

A MANCOVA was conducted to examine the two appraisal subscales, Appraisal (Stress) and Appraisal (Control), as a function of Condition and Neuroticism Level. After controlling for gender, significant multivariate effects of Condition; Wilks' Lambda (λ) = .71, $F(2, 114) = 23.19, p < .001$, partial $\eta^2 = .29$; and Neuroticism Level; $\lambda = .92$,

$F(2, 114) = 4.98, p = .008$, partial $\eta^2 = .08$; were obtained. The multivariate interaction between Condition and Neuroticism Level was not significant; $\lambda = .99, F(2, 114) = .30, p = .745$, partial $\eta^2 = .01$. Critical α level was set at .025 (after correction) for all univariate analyses. In comparison with participants in the Mild-Stress condition, participants in the High-Stress condition perceived the task to be significantly more stressful, and perceived themselves as having significantly less control during the task (Table 3). High-neuroticism participants perceived the anagram task to be significantly more stressful, and perceived themselves as having significantly less control during the task than low-neuroticism participants; regardless of which condition they were assigned to (Table 4). Neither of the univariate interactions between Condition and Neuroticism Level was statistically significant.

Table 2 (all tables and figures are appended to this manuscript)

Mood and Self-Esteem

After controlling for gender, significant multivariate effects of Condition; $\lambda = .76, F(4, 108) = 8.40, p < .001$, partial $\eta^2 = .24$; and Neuroticism Level; $\lambda = .86, F(4, 108) = 4.55, p = .002$, partial $\eta^2 = .14$; were obtained. The multivariate interaction between Condition and Neuroticism Level was not statistically significant; $\lambda = .97, F(4, 108) = .80, p = .526$, partial $\eta^2 = .03$. Critical α level was set at .012 (after correction) for all univariate analyses. Participants in the High-Stress condition reported significantly

lower levels of energetic arousal, hedonic tone, and self-esteem. They also reported significantly higher levels of tense arousal (Table 3). High-neuroticism participants reported significantly lower levels of energetic arousal and self-esteem; regardless of which condition they were assigned to (Table 4). Although both had p values below .05, the neuroticism-related differences in tense arousal and hedonic tone were not significant after correction. None of the univariate interactions between Condition and Neuroticism Level were statistically significant.

Table 3 (all tables and figures are appended to this manuscript)

Coping

After controlling for gender, significant multivariate effects of Condition; $\lambda = .83$, $F(3, 117) = 7.96, p < .001$, partial $\eta^2 = .17$; and Neuroticism Level; $\lambda = .84, F(3, 117) = 7.53, p < .001$, partial $\eta^2 = .16$; were obtained. The multivariate interaction between Condition and Neuroticism Level was also significant, $\lambda = .94, F(3, 117) = 2.70, p = .049$, partial $\eta^2 = .07$. Critical α level was set at .017 (after correction) for all univariate analyses. Participants allocated to the High-Stress condition engaged in significantly more emotion-focused coping and significantly less task-focused coping when compared with participants allocated to the Mild-Stress condition (Table 3). High-neuroticism participants reported engaging in significantly more emotion-focused and avoidance coping; regardless of which condition they were assigned to (Table 4). A significant univariate interaction between Condition and Neuroticism Level was obtained with

regard to task-focused coping; $F(1, 119) = 8.07, p = .005$, partial $\eta^2 = .06$ (Figure 1).

One-way ANCOVAs revealed that the neuroticism-related difference in task-focused coping was significant in the Mild-Stress condition; $F(1, 63) = 5.19, p = .026$; but not in the High-Stress condition; $F(1, 57) = 3.13, p = .082$.

Figure 1 (all tables and figures are appended to this manuscript)

Discussion

The current experiment had two aims. Firstly, we wished to establish the utility of an anagram-solving task as a laboratory-stressor with which to examine neuroticism-linked differences in coping. The anagram-solving task overcomes the limitations of much previous research exploring individual-differences in coping. Additionally, this task can be experimentally manipulated, which allows theory-driven predictions (such as those made by the goodness-of-fit hypothesis) to be empirically tested. The second aim of this experiment was to determine if neuroticism-linked differences in appraisal and coping could be obtained in the context of the anagram-solving task.

Individuals in the Mild-Stress condition solved significantly more anagrams than individuals in the High-Stress condition. Additionally, participants allocated to the High-Stress condition appraised the task more negatively than individuals allocated to the Mild-Stress condition. Specifically, individuals in the High-Stress condition appraised the task as being more stressful and perceived themselves as having less control during

the anagram-solving task. Moreover, participants in the High-Stress condition reported significantly higher levels of tense arousal, as well as lower levels of energetic arousal, hedonic tone, and self-esteem when compared with individuals in the Mild-Stress condition. As predicted, participants allocated to the High-Stress condition also reported engaging in significantly more emotion-focused and less task-focused coping than participants in the Mild-Stress condition. It therefore appears that the experimental manipulation evoked both negative appraisals of the task, as well as a negative affective response (specifically worse mood and lower self-esteem). Additionally, manipulating the difficulty and controllability of the task can elicit task-focused and emotion-focused coping responses predicted by the goodness-of-fit hypothesis, as well as large differences in appraised control. Taken together these results suggest that the anagram-solving task is a useful experimental-stressor.

As predicted, regardless of which condition individuals were assigned to high-neuroticism participants appraised the task as being significantly more stressful than low-neuroticism participants. In both conditions high-neuroticism participants also perceived themselves as having significantly less control during the task. Additionally, high-neuroticism participants reported significantly lower levels of energetic arousal and self-esteem in both conditions and (while no longer significant after correction) the predicted neuroticism-related differences in tense arousal and hedonic tone were approaching significance (with p values of .032 and .023 respectively). Importantly, these differences in appraisal, mood, and self-esteem do not reflect differences in task performance, as high and low-neuroticism participants solved the same number of anagrams. The compensatory control model of Hockey (1997) posits that coping with stress involves

monitoring and self-regulating effort. Although no differences in performance were obtained as a function of neuroticism-level, it is possible that because their stress level is higher, individuals who score high on neuroticism are engaging in more compensatory effort (M. W. Eysenck, Derakshan, Santos, & Calvo, 2007; Hockey, 1997). A limitation of the current experiment was that response times were not measured. Presenting anagrams on a computer and recording solve times may help determine whether high-neuroticism individuals are engaging in more compensatory effort. Unexpectedly, for both stress and controllability appraisals, as well as mood and self-esteem, Neuroticism Level did not interact with Condition. It should be noted however that a limitation of the experiment was that outcomes were only measured after the task, preventing the assessment of state *reactivity* to the stressor. Models of stress are often dynamic in nature (Hancock & Warm, 1989; Hockey, 1997) and future research should take both pre and post measures in order to determine whether Neuroticism and Condition interact with regard to stress reactivity. Additionally, taking physiological measurements may elucidate possible neuroticism-related differences in stress reactivity during actual task performance.

With regard to coping, high-neuroticism participants engaged in significantly more emotion-focused and avoidance coping than low-neuroticism participants regardless of which condition they were assigned to. This finding is consistent with the argument that neuroticism is associated with a general reliance on emotion-focused and avoidance coping (Vollrath & Torgersen, 2000). The current study extends previous research by overcoming the reliance on dispositional coping measures and substantial reporting lags that have limited previous findings. Additionally, a significant interaction between

Condition and Neuroticism Level was obtained with regard to task-focused coping. In the Mild-Stress condition low-neuroticism participants engaged in significantly more task-focused coping than high-neuroticism participants. Again, this finding is consistent with previous research reporting that neuroticism is negatively associated with task/problem-focused coping (Bouchard, 2003; McCrae & Costa, 1986; O'Brien & DeLongis, 1996); however, unexpectedly no difference was obtained in the High-Stress condition. The current findings suggest that, consistent with the goodness-of-fit hypothesis, low-neuroticism individuals reduce their use of task-focused coping as the task becomes less controllable. In contrast, high-neuroticism individuals appear to engage in the same degree of task-focused coping across both conditions (Figure 1). It may be the case that this inability to adapt coping strategy choice in response to situational variables (such as controllability) may partly account for neuroticism being associated with greater stress reactivity (Bolger & Schilling, 1991; Cheng, 2001). Future research should explore this possibility. Laboratory-tasks in which controllability can be experimentally manipulated (such as the anagram-solving task) are likely to be especially useful in addressing this question.

The current findings are broadly consistent with previous findings but importantly overcome many of the limitations of previous research in this area. Moreover, the current experiment extends the laboratory-based findings of Matthews and his colleagues (2006), and, as argued by Eysenck (1966) and Revelle (2007), demonstrates the utility of experimental methodologies in personality research. However, it is important to note that the generalization of findings obtained in laboratory-settings to the 'real-world' can be problematic (Tajfel, 1972). The way in which individuals cope with mild laboratory-

stressors may be very different to how they cope with stressful situations that have real-world implications. Future research should examine the relationships between neuroticism, appraisal, and coping in the context of specific real-world stressors. However, in order for clear conclusions regarding individual differences to be made, it is imperative that all participants report the coping strategies used when dealing with the same stressor. Further real-world research simply exploring correlations between personality-traits and coping scores obtained using dispositional and/or retrospective coping measures is unlikely to be enlightening (Connor-Smith & Flachsbart, 2007).

References

- Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. In J. P. Robinson, P. R. Shaver & L. S. Wrightsman (Eds.), *Measures of personality and psychological attitudes, Volume 1*. San Diego, CA: Academic Press.
- Bolger, N. (1990). Coping as a personality process: A prospective study. *Journal of Personality and Social Psychology, 59*, 525-537.
- Bolger, N., & Schilling, E. A. (1991). Personality and the problems of everyday life: The role of Neuroticism in exposure and reactivity to daily stressors. *Journal of Personality, 59*, 355-386.
- Bouchard, G. (2003). Cognitive appraisals, neuroticism, and openness as correlates of coping strategies: An integrative model of adaptation to marital difficulties. *Canadian Journal of Behavioural Science, 35*, 1-12.
- Boyes, M. E., & French, D. J. (2009). Having a Cyberball: Using a ball-throwing game as an experimental social stressor to examine the relationship between neuroticism and coping. *Personality and Individual Differences, 47*, 396-401.
- Cheng, C. (2001). Assessing coping flexibility in real-life and laboratory settings: A multimethod approach. *Journal of Personality and Social Psychology, 80*, 814-833.
- Connor-Smith, J. K., & Flachsbart, C. (2007). Relations between personality and coping: A meta-analysis. *Journal of Personality and Social Psychology, 93*, 1080-1107.
- Costa, P. T., Jr., & McCrae, R. R. (1987). Neuroticism, somatic complaints, and disease: Is the bark worse than the bite? *Journal of Personality, 55*, 299-316.

- David, J. P., & Suls, J. (1999). Coping efforts in daily life: Role of big five traits and problem appraisal. *Journal of Personality*, 67, 265-294.
- Endler, N. S., Macrodimitris, S. D., & Kocovski, N. L. (2000). Controllability in cognitive and interpersonal tasks: Is control good for you? *Personality and Individual Differences*, 29, 951-962.
- Eysenck, H. J. (1966). Personality and experimental psychology. *Bulletin of the British Psychological Society*, 19, 1-28.
- Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion*, 7, 336-353.
- Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., et al. (2006). The international personality item pool and the future of public domain personality measures. *Journal of Research in Personality*, 40, 84-96.
- Gow, A. J., Whiteman, M. C., Pattie, A., & Deary, I. J. (2005). Goldberg's 'IPIP' Big-Five factor markers: Internal consistency and concurrent validation in Scotland. *Personality and Individual Differences*, 39, 317-329.
- Hancock, P. A., & Warm, J. S. (1989). A dynamic model of stress and sustained attention. *Human Factors*, 31, 519-537.
- Hankin, B. L., & Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin*, 127, 773-796.
- Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological Psychology*, 45, 73-93.

- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing Company.
- Magnus, K., Diener, E., Fujita, F., & Pavot, W. (1993). Extraversion and neuroticism as predictors of objective life events: A longitudinal analysis. *Journal of Personality and Social Psychology, 65*, 1046-1053.
- Matthews, G., & Campbell, S. E. (1998). Task-induced stress and individual differences in coping *Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting* (pp. 821-825). Santa Monica: Human Factors and Ergonomics Society.
- Matthews, G., Emo, A. K., Funke, G., Zeidner, M., Roberts, R. D., Costa, P. T., Jr., et al. (2006). Emotional intelligence, personality, and task-induced stress. *Emotion, 12*, 96-107.
- Matthews, G., Jones, D. M., & Chamberlain, A. G. (1990). Refining the measurement of mood: The UWIST Mood Adjective Checklist. *British Journal of Psychology, 81*, 17-42.
- McCrae, R. R., & Costa, P. T., Jr. (1986). Personality, coping, and coping effectiveness in an adult sample. *Journal of Personality, 54*, 385-405.
- O'Brien, T. B., & DeLongis, A. (1996). The interactional context of problem-, emotion-, and relationship-focused coping: The role of the big five personality factors. *Journal of Personality, 64*, 775-813.
- Park, C. L., Armeli, S., & Tennen, H. (2004). Appraisal-coping goodness of fit: A daily internet study. *Personality and Social Psychology Bulletin, 30*, 558-569.

- Revelle, W. (2007). Experimental approaches to the study of personality. In C. F. B. Robins & R. Krueger (Eds.), *Handbook of research methods in personality psychology*. New York: Guilford.
- Revelle, W., & Oehlberg, K. (2008). Integrating experimental and observational personality research: The contributions of Hans Eysenck. *Journal of Personality*, 76, 1387-1414.
- Rosenberg, M. (1965). *Society and adolescent child*. Princeton, NJ: Princeton University Press.
- Schneider, T. R. (2004). The role of neuroticism on psychological and physiological stress responses. *Journal of Experimental Social Psychology*, 40, 795-804.
- Szalma, J. L. (2008). Individual differences in stress reaction. In P. A. Hancock & J. L. Szalma (Eds.), *Performance under stress*. Aldershot, Hampshire, UK: Ashgate.
- Tajfel, H. (1972). Experiments in a vacuum. In J. Israel & H. Tajfel (Eds.), *The context of social psychology: A critical assessment*. London: Academic Press.
- Tresselt, M. E., & Mayzner, M. S. (1966). Normative solution times for a sample of 134 solution words and 378 associated anagrams. *Psychonomic Monograph Supplements*, 1, 293-298.
- Vollrath, M., & Torgersen, S. (2000). Personality types and coping. *Personality and Individual Differences*, 29, 367-378.
- Watson, D., & Hubbard, B. (1996). Adaptational style and dispositional structure: Coping in the context of the five-factor model. *Journal of Personality*, 64, 737-774.

Zeidner, M., & Saklofske, D. (1996). Adaptive and maladaptive coping. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications*. New York: John Wiley and Sons, Inc.

Table Captions

Table 1. Mean number of anagrams solved (and standard deviation) as a function of Condition and Neuroticism (N) Level

Table 2. Differences in appraisal, mood, self-esteem, and coping as a function of being assigned to the Mild or High Stress condition

Table 3. Differences in appraisal, mood, self-esteem, and coping as a function of Neuroticism (N) Level

Figure Caption

Figure 1. Mean task-focused coping scores (and standard error) for high and low neuroticism (N) participants in the Mild and High Stress Conditions

Table 1. Mean number of anagrams solved (and standard deviation) as a function of Condition and Neuroticism (N) Level

	Mean Number of Anagrams Solved	Standard Deviation
Mild Stress		
Low N	5.74	.62
High N	5.70	.61
High Stress		
Low N	1.60	1.76
High N	2.13	1.93

Table 2. Differences in appraisal, mood, self-esteem, and coping as a function of being assigned to the Mild or High Stress condition

	Mean	SD	F	df	Error df	p	Partial η^2
<i>Appraised Stress:</i>							
Mild Stress	12.84	8.33					
High Stress	18.48	6.77	15.78	1	115	< .001*	.12
<i>Appraised Control:</i>							
Mild Stress	14.95	3.84					
High Stress	9.40	4.98	46.26	1	115	< .001*	.29
<i>Energetic Arousal:</i>							
Mild Stress	50.69	12.33					
High Stress	40.22	14.09	17.05	1	111	< .001*	.13
<i>Tense Arousal:</i>							
Mild Stress	35.03	17.53					
High Stress	47.85	15.14	15.97	1	111	< .001*	.13
<i>Hedonic Tone:</i>							
Mild Stress	86.15	27.43					
High Stress	60.69	25.99	25.70	1	111	< .001*	.19
<i>RSES:</i>							
Mild Stress	71.31	17.70					
High Stress	55.19	17.30	24.44	1	111	< .001*	.18
<i>T-F Coping:</i>							
Mild Stress	46.28	10.36					
High Stress	40.67	11.10	9.17	1	119	.003*	.07
<i>E-F Coping:</i>							
Mild Stress	22.43	16.51					
High Stress	32.66	16.72	10.69	1	119	.001*	.08
<i>Avoidance Coping:</i>							
Mild Stress	25.34	9.55					
High Stress	28.12	9.16	2.35	1	119	.128	.02

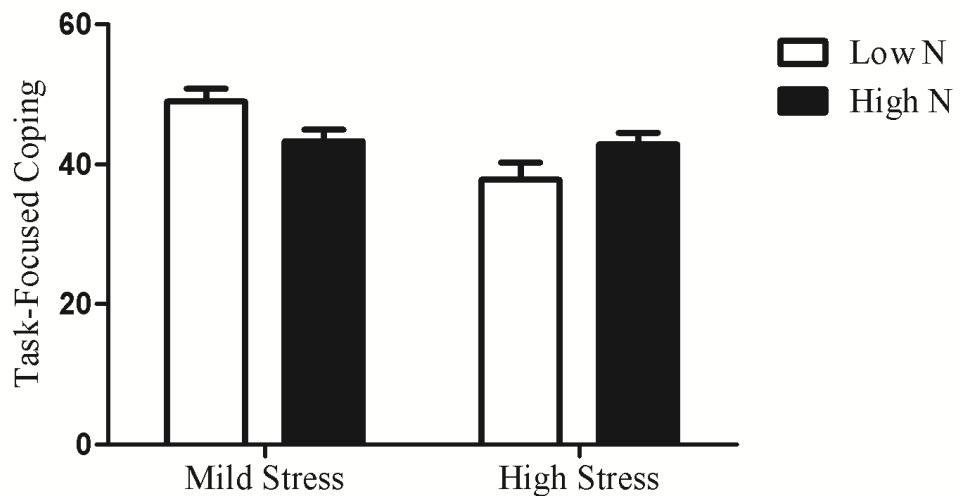
* Significant after Bonferroni correction

Table 3. Differences in appraisal, mood, self-esteem, and coping as a function of Neuroticism (N) Level

	Mean	SD	F	df	Error df	p	Partial η^2
<i>Appraised Stress:</i>							
Low N	13.32	8.44					
High N	17.48	7.31	7.71	1	115	.006*	.06
<i>Appraised Control:</i>							
Low N	13.68	5.26					
High N	11.13	4.86	7.27	1	115	.008*	.06
<i>Energetic Arousal:</i>							
Low N	49.86	12.76					
High N	41.92	14.40	8.08	1	111	.005*	.07
<i>Tense Arousal:</i>							
Low N	36.91	18.44					
High N	44.95	15.92	4.74	1	111	.032	.04
<i>Hedonic Tone:</i>							
Low N	81.32	30.65					
High N	67.51	26.99	5.31	1	111	.023	.05
<i>RSES:</i>							
Low N	70.46	18.84					
High N	57.37	17.44	14.06	1	111	< .001*	.11
<i>T-F Coping:</i>							
Low N	44.15	12.67					
High N	43.10	9.34	.00	1	119	.983	.00
<i>E-F Coping:</i>							
Low N	20.03	15.48					
High N	34.11	16.24	22.70	1	119	< .001*	.16
<i>Avoidance Coping:</i>							
Low N	24.52	9.65					
High N	28.68	8.83	6.41	1	119	.013*	.05

* Significant after Bonferroni correction

Figure 1. Mean task-focused coping scores (and standard error) for high and low neuroticism (N) participants in the Mild and High Stress Conditions



Ethical Statement:

The authors do not have any interests that might be interpreted as influencing the research, and the research protocol was approved by the University Human Research Ethics Committee (University of Western Australia).