

This is the final accepted version of a paper published in *Individual Differences Research*

Citation:

Boyes, M. E. & French, D. J. (2011). Does appraisal mediate the relationship between neuroticism and maladaptive coping? A pilot study in the context of university exams. *Individual Differences Research*, 9(3), 165-172.

RUNNING HEAD: Neuroticism and coping with university exams

Does appraisal mediate the relationship between neuroticism and maladaptive coping? A pilot study in the context of university exams

Mark E. Boyes^{a, b} & Davina J. French^{c, b}

a: Department of Social Policy & Intervention, University of Oxford; *b*: School of Psychology, University of Western Australia; *c*: Centre for Mental Health Research, Australian National University

Word Count: 3301

Corresponding Author:

Dr Mark Boyes

Postdoctoral Research Officer
Department of Social Policy & Social Work
University of Oxford
Barnett House
32 Wellington Square, Oxford, OX1 2ER
mark.boyes@socres.ox.ac.uk

Ph: +44 1865 2 70336

Fax: +44 1865 2 70324

Abstract

This pilot study examined relationships between neuroticism, appraisal, and coping in a sample of undergraduate students ($N = 77$) prior to sitting university exams. Results replicated previous findings that neuroticism is significantly correlated with avoidance coping and maladaptive forms of emotion focused coping (such as emotional venting), whilst overcoming the limitations of dispositional coping measures and minimizing the time-lags associated with retrospective coping measurement. Results also offered partial support for the goodness of fit hypothesis; however, stress and controllability appraisals did not mediate the relationships between neuroticism and either avoidance coping or emotional venting. Limitations of using university exams as a stressor are identified and it is concluded that laboratory tasks, in which controllability can be experimentally manipulated, are likely to be useful in determining whether or not stressor appraisals mediate the relationship between neuroticism and coping.

Keywords: neuroticism, coping, appraisal, goodness of fit, stress, controllability

Coping can be defined as constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984). Key to this definition is the notion of cognitive appraisal; essentially an event can only be considered to be stressful if it is perceived to be stressful by the given individual. Additionally, the coping process involves a dynamic interplay between the person and the stressful situation (O'Brien & DeLongis, 1996) and this has naturally led researchers to explore the role of personality traits in the coping process (Vollrath & Torgersen, 2000). The role of neuroticism in the coping process has received particular attention (Watson & Hubbard, 1996) and is the focus of this study.

Neuroticism is a personality trait associated with an increased likelihood of experiencing negative emotions such as anxiety and depression (Costa & McCrae, 1987). Neuroticism is also 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. Specifically, high neuroticism individuals are thought 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; 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 or task focused coping (Boyes & French, 2009; David & Suls, 1999; O'Brien & DeLongis, 1996).

These findings are theoretically consistent with a personality type categorized as prone to experiencing negative emotions (Watson & Hubbard, 1996); however, much of the research in this area has been limited by a reliance on dispositional and retrospective coping measurement. Indeed, over 80 percent of the research published between 1980 and 2004 used

dispositional or retrospective methodologies to measure coping (Connor-Smith & Flachsbart, 2007). Both of these methodologies may overestimate relationships between personality traits and coping strategy use in any given stressful situation (David & Suls, 1999). Firstly, measures which tap how one *generally* or *usually* copes with stress are likely to reflect dispositions to a greater extent than situation specific measures (David & Suls, 1999). Secondly, the more time which elapses between an event and its assessment, the more likely individuals will be biased towards giving dispositional reports of their behavior. Retrospective reports are also influenced by whether individuals experience an (un)successful outcome (Coyne & Gottlieb, 1996). Finally, when retrospective methodologies are used participants may recall different stressful events, making drawing conclusions about individual differences in coping difficult if not impossible.

Due to these limitations it has been suggested that examining the relationship between personality and coping with a specific stressor, where coping can be measured either before, during, or immediately after the stressful situation, would allow for firmer conclusions regarding the relationships between personality, appraisal, and coping to be made (Bolger, 1990). The first aim of the current study was to examine the relationships between neuroticism, appraisal, and coping in the context of a current situation-specific stressor; university exams. Using approaching exams as a stressor allows concurrent coping efforts to be measured and minimizes the time-lag associated with retrospective coping measurement. In accordance with previous research it was predicted that neuroticism would be significantly correlated with negative appraisals of the approaching exams (Costa & McCrae, 1987; Schneider, 2004). Additionally, based on previous findings it was predicted that neuroticism would be positively correlated with maladaptive emotion focused and avoidant coping strategy use and negatively correlated with task/problem focused coping (O'Brien & DeLongis, 1996).

The goodness of fit hypothesis provides a potential rationale for *why* neuroticism is consistently associated with the use of maladaptive coping strategies. Goodness of fit

emphasizes the importance of the match between an individual's coping efforts and the specific situation. Essentially, it is argued that problem or task focused coping should be more beneficial in *controllable* situations; where there are more opportunities to actually change the circumstances or have an impact on the stressful event. In contrast, emotion focused and avoidant strategies should be more useful in *less controllable* situations, which by definition allow less change of the circumstances of the stressful situation (Conway & Terry, 1994; Park, Armeli, & Tennen, 2004). Essentially, the goodness of fit hypothesis proposes the use of situationally appropriate coping strategies (Zeidner & Saklofske, 1996). From this perspective, it is possible that because high neuroticism individuals tend to appraise stressful situations as more threatening and less controllable, they therefore engage in more maladaptive emotion focused and avoidant coping. A second aim of the current study was to determine if stressor appraisals mediate the relationships between neuroticism and coping in the context of university exams.

Method

Participants

Seventy seven undergraduate students (24 male; 53 female) participated in the study ($M = 22.13$ years, $SD = 7.54$). The gender ratio of the sample reflected the gender breakdown of the undergraduate psychology population. First year students gained academic credit in exchange for participating in the study.

Materials

The neuroticism subscale of the NEO-FFI (Costa & McCrae, 1992) was used to measure neuroticism. The NEO-FFI contains 60 items with 12 items assessing each of the big five personality factors. Items are rated on a five point scale (0: *Strongly disagree*; 4: *Strongly*

agree). Costa and McCrae (1992) have reported internal consistencies of the five subscales to range between .68 (agreeableness) and .86 (neuroticism).

An exam appraisal scale was constructed to measure how stressful and controllable participants perceived the approaching exams to be. It consists of two sub-scales: five items measuring how stressful and important the examinations were perceived to be (e.g. ‘to what extent do you find the upcoming event stressful?’ $\alpha = .83$), and three items measuring controllability and predictability of the outcome (e.g. ‘to what extent do you feel you have control over the outcome?’ $\alpha = .72$). Responses were made on a four point scale (1: *Not at all*; 4: *Extremely*). A principal components analysis (using oblique rotation) revealed that the two predicted components emerged clearly, and accounted for 61.13 percent of the overall variance.

The COPE (Carver, Scheier, & Weintraub, 1989) is a 60 item scale that assesses the use of a variety of coping strategies. It contains 15 subscales (active coping, planning, seeking instrumental social support, seeking emotional social support, suppression of competing activities, turning to religion, positive reinterpretation and growth, restraint coping, acceptance, focusing on and venting emotions, denial, behavioral disengagement, mental disengagement, alcohol and drug use, and humor). All the subscales of the COPE consist of four items. Responses are made on a four point scale (1: *I usually don't do this at all*; 4: *I usually do this a lot*). Subscale scores are calculated by summing responses to the four items that make up each subscale. Internal consistencies of the individual subscales are acceptably high ranging between .45 and .92, with a median value of .71 (Carver, et al., 1989). Participants completed a situational version of the COPE specifically asking how they were coping with the approaching exams¹.

Recent assessments of the dimensionality of the COPE suggest that it is comprised of four factors (Litman, 2006). These factors are: self-sufficient problem-focused coping (comprised of the planning, active coping, and suppression of competing activities scales), self-sufficient emotion-focused coping (comprised of the restraint coping, positive reinterpretation,

acceptance, humor, and turning to religion subscales), avoidant coping (comprised of the behavioral disengagement, mental disengagement, denial, and alcohol and drug use subscales), and social support coping (comprised of the seeking instrumental social support, seeking emotional social support, and focusing on and venting emotions subscales, Litman, 2006). In order to examine the generally maladaptive strategy of emotional venting, the social support coping scale was further divided into a social support component (seeking instrumental and emotional social support) and an emotional venting component (focusing on and venting emotions).

Procedure

Participants were recruited in the week prior to the commencement of end of year examinations. This period, after classes had ended but before any exams had been written, was thought to be more equivalent for all students than waiting until exams commenced; when differing timetables would introduce variability. After reading an information sheet and signing a consent form, participants completed the NEO-FFI, the exam appraisal scale, and the COPE, in that order.

Results

Total neuroticism, appraised stress, appraised controllability, self-sufficient problem-focused coping (SS-PF), self-sufficient emotion-focused coping (SS-EF), avoidant coping, social support coping, and emotional venting scores were calculated by summing relevant items. These scores are summarized in Table 1.

Table 1

Given that gender differences in neuroticism have been reported (Hankin & Abramson, 2001) gender was controlled for in all analyses. Partial correlations (controlling for gender) between neuroticism, appraised stress, appraised control, and coping strategy use were calculated. These results are summarized in Table 2.

Table 2

Neuroticism was significantly correlated with appraised stress, appraised controllability, avoidant coping, and emotional venting. Additionally, appraised stress was significantly correlated with emotional venting; raising the possibility that appraised stress mediated the relationship between neuroticism and emotional venting. A hierarchical regression analysis was used to examine this possibility (Baron & Kenny, 1986). Emotional venting was entered as the outcome variable. In order to control for any gender effects, gender was entered as the first step in the analysis. Neuroticism was entered in the second step of the analysis and stress appraisal was entered in the third step of the analysis. The results of the hierarchical regression are summarized in Table 3. The final step of the model accounted for 32 percent of the variance in emotional venting; $R^2 = .32$, $F(3, 71) = 11.21$, $p < .001$. After controlling for gender, neuroticism was a significant predictor of emotional venting in the second step of the model but given stress appraisal was not a significant predictor of emotional venting in the final step of the model, appraised stress did not mediate the relationship between neuroticism and emotional venting.

Table 3

Discussion

As predicted, neuroticism was positively correlated with perceived stress and negatively correlated with appraised controllability in the context of the approaching exams. This is consistent with previous research reporting that neuroticism is associated with negative stressor appraisals (Costa & McCrae, 1987; Schneider, 2004). Additionally, neuroticism was significantly correlated with avoidance coping and emotional venting. This is consistent with previous research suggesting that neuroticism is associated with a reliance on avoidant and maladaptive emotion focused coping strategies (Vollrath & Torgersen, 2000); however, by measuring concurrent coping strategy use in the face of approaching examinations, this study overcomes the limitations of dispositional coping measurement and minimizes the time-lags associated with retrospective coping measures.

In accordance with the goodness of fit hypothesis, appraised controllability was positively correlated with problem focused coping. Additionally, as predicted by goodness of fit, the negative correlation between appraised controllability and avoidance coping was approaching significance ($r = -.20, p = .09$). However, stress and controllability appraisals did not mediate the relationships between neuroticism and either avoidance coping or emotional venting. This may have been due to the relatively small sample and limitations associated with using the approaching exams as a stressor. For most students end of year examinations are not a novel situation; they are likely to have prepared for multiple exams in their first semester, as well as during high school (in order to get into university). Therefore, participants may have drawn on previous experiences of how they typically or previously coped with exams when responding to the COPE. This may have resulted in retrospective recall biases contaminating responses to the situational coping measure. Additionally, the examination period is not equivalent for all students. Importantly, the number of exams that students write, and individual exam timetables can vary substantially. It is likely that these unmeasured variables may have an

important impact on both appraisals of the approaching exams, as well as coping in the context of upcoming university exams.

In order to clarify the relationships between neuroticism, appraisal and coping future research should attempt to replicate these findings using novel, task specific stressors in which coping can be assessed immediately after participation. Laboratory based stressors are likely to be extremely useful in this context. This is for three major reasons. Firstly, laboratory stressors overcome the limitations of dispositional coping measurement, and minimize the time lag associated with the retrospective coping measures employed in much previous research (David & Suls, 1999). Secondly, presenting the same objective stressor to all participants minimizes contextual confounds and allows firmer conclusions regarding individual differences in the coping process to be made (Connor-Smith & Flachsbart, 2007). Finally, the controllability of laboratory tasks can be experimentally manipulated to examine links between cognitions (e.g. appraised controllability) and personality related differences in coping; rather than simply relying on correlational approaches. The anagram-solving task used by Boyes and French (2010) appears an ideal task with which to investigate this question.

The current study obtained predicted correlations between neuroticism, appraisal, and avoidance coping and emotional venting in the context of university exams, and results offered partial support for the goodness of fit hypothesis. Unexpectedly, appraisal did not mediate the relationship between neuroticism and either avoidance coping or emotional venting; however, future research should examine the potential mediating influence of appraisal on the relationship between neuroticism and coping in the context of laboratory stressors in which controllability can be experimentally manipulated.

Footnotes

- 1: It should be noted that participants completed the appraisal and coping measures with regard to what they were *currently* thinking and doing, not what they anticipated they would be thinking and doing once exams actually commenced

References

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Bolger, N. (1990). Coping as a personality process: A prospective study. *Journal of Personality and Social Psychology, 59*, 525-537.
- 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.
- Boyes, M. E., & French, D. J. (2010). Neuroticism, stress, and coping in the context of an anagram-solving task. *Personality and Individual Differences, 49*, 380-385.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283.
- Connor-Smith, J. K., & Flachsbart, C. (2007). Relations between personality and coping: A meta-analysis. *Journal of Personality and Social Psychology, 93*, 1080-1107.
- Conway, V. J., & Terry, D. J. (1994). Appraised controllability as a moderator of the effectiveness of different coping strategies: A test of the goodness of fit hypothesis. *Australian Journal of Psychology, 44*, 1-7.
- 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.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa: Psychological Assessment Resources.

- Coyne, J. C., & Gottlieb, B. H. (1996). The mismeasure of coping by checklist. *Journal of Personality, 64*, 959-991.
- 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.
- 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.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing Company.
- Litman, J. A. (2006). The COPE inventory: Dimensionality and relationships with approach- and avoidance-motives and positive and negative traits. *Personality and Individual Differences, 41*, 273-284.
- 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.
- 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.
- Schneider, T. R. (2004). The role of neuroticism on psychological and physiological stress responses. *Journal of Experimental Social Psychology, 40*, 795-804.
- 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 1. Mean neuroticism, appraisal, and coping scores (standard deviations in parentheses)

	Mean	Standard Deviation
Neuroticism	22.73	6.94
Appraised stress	15.31	2.80
Appraised control	8.04	1.59
SS-PF	32.39	5.95
SS-EF	46.39	7.86
Avoidant coping	26.26	5.53
Social support coping	18.58	5.58
Emotional venting	9.10	2.30

SS-PF = self-sufficient problem-focused coping

SS-EF = self-sufficient emotion-focused coping

Table 2. Partial correlations (controlling for gender) between neuroticism, appraisal, and coping

	N	App Stress	App Control	SS-PF	SS-EF	Avoidance	SS	Venting
N	1							
App stress	.28*	1						
App control	-.28*	-.24*	1					
SS-PF	.07	.01	.27*	1				
SS-EF	.12	-.13	.00	.34*	1			
Avoidance	.31*	.14	-.20	-.21	.23	1		
SS	.14	.11	-.04	.19	.18	.04	1	
Venting	.46*	.30*	-.05	.25*	.18	.19	.53*	1

* $p < .05$

N = neuroticism

App Stress = appraised stress

App Control = appraised controllability

SS-PF = self-sufficient problem-focused coping

SS-EF = self-sufficient emotion-focused coping

Avoidance = avoidant coping

SS = social support coping

Venting = emotional venting

Table 3. Hierarchical regression testing the mediating effect of appraised stress on the relationship between neuroticism and emotional venting

	<i>B</i>	Standard Error	β	<i>t</i>	<i>p</i>
<i>Step 1</i>					
Gender	-1.42	.56	-.29	-2.55	.013
<i>Step 2</i>					
Gender	-1.15	.50	-.23	-2.31	.024
Neuroticism	.15	.03	.46	4.62	< .001
<i>Step 3</i>					
Gender	-1.15	.49	-.23	-2.35	.021
Neuroticism	.14	.03	.41	3.97	< .001
Appraised Stress	.15	.08	.18	1.75	.084

Note: outcome variable is emotional venting