Stress among UK academics : identifying who copes best?

DARABI, Mitra, MACASKILL, Ann <http://orcid.org/0000-0001-9972-8699> and REIDY, Lisa <http://orcid.org/0000-0001-5442-2346>

Stress among UK academics: Identifying who copes best?

Mitra Darabi

Sheffield Hallam University, Psychology Research Group, Sheffield, UK

Ann Macaskill, Education Research Network, Sheffield Hallam University, Sheffield, UK

Lisa Reidy, Education Research Network, Sheffield Hallam University, Sheffield, UK

Corresponding author: Dr Mitra Darabi, Psychology Research Group, Sheffield Hallam University, Heart of the Campus Building, Collegiate Crescent, Collegiate Campus, Sheffield S10 2 BQ

Tel: 01142252326 E-mail: m.darabi@shu.ac.uk

Professor Ann Macaskill, Sheffield Hallam University, Unit 8 Science Park, Howard Street, Sheffield S1 1WB, UK

Tel: 01142254604 E-mail: a.macaskill@shu.ac.uk

Dr Lisa Reidy, Sheffield Hallam University, Unit 8 Science Park, Howard Street, Sheffield S1 1WB, UK

Tel: 0114224 2393 E-mail: l.reidy@shu.ac.uk

Abstract

This paper examined the levels of stress and coping strategies among UK academics. Adopting a positive psychology approach, the influence of the character strengths of hope, optimism, gratitude and self-efficacy, on stress, subjective well-being (SWB), and mental health (GHQ) was examined in 216 academics in a UK university. The study explored the relationship between coping styles and work-coping variables of sense of coherence and work locus of control and stress. No significant differences on the stress, well-being and mental health measures were found for participants' gender, whether in full-time or part-time employment and level of seniority within the university. Participants using problem-focussed coping experienced lower levels of stress while dysfunctional coping was a positive predictor of stress. Hope agency, hope pathway, gratitude, optimism and self-efficacy were the strongest positive predictors of satisfaction with life (SWL), while levels of perceived stress negatively predicted SWL. Gratitude, hope agency and self-efficacy positively predicted positive affect, while stress was a negative predictor. Gratitude, hope agency, self-efficacy and optimism were negative significant predictors of negative affect while stress was a positive predictor. Gratitude positively predicted mental health, while stress was a negative predictor and optimism was a significant moderator of the relationship between stress and mental health. Academics with higher levels of gratitude, self-efficacy, hope and optimism report lower levels of stress at work and higher levels of well-being as measured by higher life satisfaction, higher positive affect and lower negative affect. New approaches to stress management training are suggested based on these findings.

Key words: Character strengths; coping; gratitude; mental health; stress; subjective well-being

Stress among UK academics: Identifying who copes best?

Introduction

Changes in the academic environment suggest that the nature of academics' work has changed significantly in the last two decades (Kinman, 2008). Reductions in funding, relatively low pay, heavy workloads, long working hours, the growth in the number of students, poor communications, role ambiguity and striving for publications have been identified in many studies as factors that contribute to work stress (e.g. Archibong, Bassey, & Effiom, 2010; Kinman, 2008; Rutter, Herzberg, & Paice, 2002; Winefield & Jarret, 2001). A substantial literature over the past four decades has consistently shown that work stressors cause illness and reduce productivity at work (Kinman, 2008). There is now an acceptance that certain levels of work stress are inevitable, so employers should be promoting the psychological well-being of their employees to help them cope better with stress (NICE, 2009). The main objective of the study was to examine why some academics cope better with stress at work and preserve their well-being and mental health. Identifying the psychological characteristics and coping styles of academics who seem more able to cope with the stresses of academia is novel in stress research where the focus is normally on those do not cope well. Knowledge of what appears to work in terms of psychological characteristics and coping styles will allow new interventions to be developed to facilitate coping with stress at work. Individual characteristics such as gender, job position and personality characteristics may influence individuals' coping abilities. They may interact with job stressors and either exacerbate or alleviate work stress (Sharpley, Reynolds, Acosta, & Dua, 1996).

Stress

While there is no consensus among stress researchers on definitions and models of stress, the transactional model of stress and coping and its associated definition is the one currently used most widely (Folkman & Lazarus, 1985). Within this model, stress refers to a transaction

between an individual and the environment in terms of person-environment fit. It is an adaptive response to an event that may have positive or negative implications for well-being (Elo, Ervasti, Kuosma, & Mattila, 2008). Seyle (1987) suggested that two broad types of stress response occur. The first is where stress has negative effects on health and well-being, which he simply labels stress, while the second refers to stress that acts as a motivator, which he calls eustress. Selye believed that our appraisal of an event determines whether a situation is judged to be stressful (bad stress) or eustressful (good motivating stress) (Selye, 1987). Events are judged to be stressful if individuals judge that the demands being made exceed their ability to cope with them. Whereas, if an event is conceptualised as challenging but individuals feel that they will be able to cope, eustress is experienced. The concept of eustress is important when considering stress at work, as it can provide positive motivation. Selye (1987) suggested that learning how to react to stressors by using positive emotions such as hope, gratitude and goodwill was likely to increase eustress and reduce stress although he did not empirically test this prediction (Selye, 1987; cited in Elo et al., 2008). The transactional model and its definitions underpin the research reported here. To recap, this model suggests that stress is generated from interactions between the individual and their environment, where the individual appraises a situation and decides that he/she does not have the coping resources to deal with it.

There is no consensus amongst stress researchers on whether there are gender differences in the levels of perceived stress of male and female academics. In reviews of the stress literature on academics, Kinman (1998) and Gmelch and Burns (1994) reported that there were no significant gender differences between male and female academics. In a more recent study, Adebiyi (2013) also found no significance difference for the levels of stress between males and females among Nigerian lecturers. However, Archibong et al. (2010) found that stress levels were greater in Nigerian female academics. Similarly, Kinman and

Wray (2013) also reported that UK female academics experienced higher levels of stress compared with male academics. This controversy in the literature provides the rationale for comparing gender differences in stress levels in the current study of stress in academics.

Positive psychology and well-being

The history of psychology over the last hundred years suggests that the main focus has been on measuring and treating psychopathology and promoting well-being has received little attention (Seligman & Csikzentmihaly, 2000). Traditionally, stress research fits this model, by assessing stress levels and focusing on describing individuals who are finding it difficult to cope. This generally involves measuring their levels of psychopathology. Positive psychology, the perspective adopted in the current study, turns this on its head and is interested in the variables that enable individuals to survive and even thrive in difficult situations. The aims of positive psychology are to develop well-being in individuals, organisations and societies (Seligman & Csikzentmihaly, 2000). Well-being is assessed subjectively, the argument being that as human nature is so diverse, only the individual is really aware of the circumstances that make him/her feel good about himself/herself. Based on empirical research, subjective well-being (SWB) comes from experiencing high levels of positive affect, low levels of negative affect and high levels of life satisfaction (Diener, Suh, Lucas, & Smith, 1999). To allow comparison with previous research an assessment of mental health utilising the medical model approach of assessing levels of psychopathology was also included in the present study.

Character strengths

Within positive psychology, character strengths are defined as being positive attributes within human personality that are morally or ethically valued (Park & Peterson, 2009). While Park, Peterson, and Seligman (2004) have identified 24 character strengths, empirical support is lacking for many of them (Peterson & Seligman, 2004). For this study

the research literature was reviewed to identify character strengths that have previously demonstrated a relationship with well-being. The strengths of hope, optimism, gratitude and self-efficacy were identified for inclusion in this study.

Hope is future focussed and is defined as an interaction between agency and pathway thinking (Snyder et al., 2003). Agency thinking focuses on future goal setting while pathways thinking concerns planning strategies to meet these goals. Individuals higher in hope are better at identifying goals and planning strategies for their achievement, including back up plans if the first strategy is unsuccessful. High hope individuals have been shown to experience higher levels of well-being and are more likely to experience feelings of worth, be satisfied with life and cope better with stress (Chang, 1998; Park et al., 2004; Peterson & Park, 2006; Snyder, 2002). However, most of this research has been conducted on student samples.

Optimism as utilised in this study, is defined as a dispositional trait and is measured on a scale from optimism to pessimism. Underpinning the measurement of optimism is an expectancy-value theory (Scheier & Carver, 1994). This suggests that individuals are motivated by having goals (values) and their belief in their ability to achieve these goals (expectancy) determines their levels of optimism or pessimism. Aspinwall and Leaf (2002) reported that optimists produce less negative behaviour and show more adaptive functions that can be used to decrease the negative effect of stressors. A review of research predating positive psychology, reports that optimistic individuals experience higher levels of well-being (Scheier & Carver, 1992).

Gratitude is another character strength associated with well-being. It refers to the experience of a sense of thankfulness and appreciation in response to received benefits (Emmons & McCullough, 2004). Froh, Kashdan, Ozimkowski, and Miller (2009) found a positive relationship between gratitude, positive affect and satisfaction with life in a student

sample. Other research found a significant association between gratitude and well-being in daily life again among undergraduate students (Emmons & McCullough, 2003).

Self-efficacy refers to the degree to which individuals believe in their own ability to achieve their goals or ambitions (Williams, 2010). Lazarus (1990) claimed that self-efficacy could moderate the reaction to stress. Self-efficacy has been shown to be a predictor of health and well-being (Scholz, Gutiérrez-Doña, Sud, & Schwarzer, 2002). This is the first study to examine the role of these strengths in relation to academics coping with the stress of academia.

Coping styles and work-coping variables

There is also a lack of research on the effect of academics' coping styles on their perception of stress. Coping style is defined as a typical response to stressful environments or negative events (Folkman, 1997; Folkman & Lazarus, 1988). We hypothesised that coping strategies may determine whether academics cope positively or negatively with stress. Based on research with other populations, adopting problem-focused and emotion-focused coping will predict lower perceived stress at work while denial and dysfunctional coping will predict higher perceived stress at work (Carver, Scheier, & Weintraub, 1989).

So far the focus has been on individual characteristics that may affect the perception of coping with workplace stress but elements of the nature of the work being undertaken can also affect how stressful it is perceived to be. Whether work provides a sense of coherence, in that it is comprehensible, manageable and meaningful has been shown to facilitate successful coping with environmental stressors (Antonovsky, 1993). Few studies have examined the association between sense of coherence and coping with stress (Carmel & Bernstein, 1989; Kinman, 2008). Kinman (2008) found that high levels of sense of coherence were associated with better psychological and physical health and low levels of stress at work among academics. For this reason, a measure of sense of coherence was included in this study.

The subjective assessment of the degree of control that individuals feel they have at work, labelled as work locus of control, has also been shown to be important in coping with stress (Spector, 1982). It measures the degree to which individuals feel they can influence events at work, with internals at one end of the continuum believing that they can, while externals at the other end, believe that only other powerful individuals can exert such influence. It also influences how success or failure in a work context is judged as either being due to them personally (internals) or due to external factors (externals). Work locus of control has previously been shown to influence job satisfaction, job performance and turnover in other workplaces (Spector, 1982, 1985). Johnson, Batey, and Holdsworth (2009) found that work locus of control was positively associated with general health in a sample of university students. However, there is a lack of research examining the effects of work locus of control on coping with stress amongst academics, hence its inclusion.

The present study

The aim of the study was to identify some of the psychological characteristics and coping styles of academics who cope better with work stress and manage to preserve their well-being and mental health. To achieve this, stress levels, coping styles, work-coping variables (work locus of control and sense of coherence), well-being, mental health, the character strengths of hope, optimism, gratitude and self-efficacy were assessed in a sample of academics. Based on previous research albeit with other populations, the hypotheses were that:

1. Perceived stress will be a negative predictor of well-being at work as measured by satisfaction with life (SWL), positive affect (PA), and mental health (GHQ) and a positive predictor of negative affect (NA).

2. Problem-focused and emotion-focused coping styles will predict lower stress at work, while denial and dysfunctional coping styles will predict higher perceived stress levels.

3. Lower levels of work locus of control (WLC) and lower levels of sense of coherence (SoC) will predict increased perceived stress at work.

Hypotheses 1 to 3 are illustrated in Figure 1

-Figure 1 here-

4. Character strengths will have a positive relationship with SWL, PA, and GHQ, and a negative relationship with NA.

5. Higher levels of the character strengths of hope agency, hope pathway, optimism, gratitude and self-efficacy will have a negative correlation with perceived stress and this is illustrated in Figure 2.

-Figure 2 here-

6. The interaction between stress and each of the character strengths (hope agency, hope pathway, optimism, gratitude and self-efficacy) may affect well-being and mental health. The hypothesised associations are shown in Figure 3 for hope agency but will apply to each of the character strengths.

-Figure 3 here-

Method

Participants

Two hundred and sixteen academic staff from a post-92 British university in the North of England took part in this study. The university has around 2,265 academic staff so this represents almost 10% of the staff group. Participants included 144 females (66.7%), and 72 males (33.3%), with an average age of 46.39 years (*SD*=10.39). There were 72.2% *(N*=156) in full-time positions and the remainder 27.8% (*N*=60) were employed part-time. In terms of academic grades, 7.9% (*N*=17) were associate lecturers, 6.5% (*N*=14) lecturers, 47.2% (*N*=102) senior lecturers, 15.3% (*N*=33) principal lecturers, 0.9% (*N*=2) readers, 3.7% (*N*=8) professors, 3.2% (*N*=7) SSG (Senior Staff Grade), 1.9% (*N*=4) research associate, 1.4%

(*N*=3) research fellow, 2.3% (*N*=5) senior research fellow, 0.9% (*N*=2) principal research fellow and 8.8% (*N*=19) did not disclose.

Measures

Gender, age, whether in full-time or part-time employment and position within the university were included in the questionnaire.

Character strengths

The Adult Hope Scale (AHS; Snyder et al., 1991) measures hope and consists of 12 items: 4 items measuring pathways thinking (e.g., "I energetically pursue my goals"), 4 items measuring agency thinking (e.g., "I meet the goals that I set for myself"), and 4 items used as filler items. The pathways items focus on a person's cognitive evaluation of his/her ability to produce routes to achieving his/her goals. The agency thinking items reflect a person's general goal determination in the past, present and future. Respondents are asked to rate the extent of their agreement with the items using an 8-point Likert scale ranging from 1 (*definitely false*) to 8 (*definitely true*). The Cronbach's alpha estimates range from .74 to .88. Higher scores on the AHS show greater levels of hope.

The Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994) is a 10-item measure of dispositional optimism. Six items measure optimism plus four filler items. Three items are positively worded (e.g.,"In uncertain times, I usually expect the best") and the other three are negatively worded (e.g.,"I rarely count on good things happening to me"). The three negatively worded items constitute the pessimism subscale, while the three positively worded items form the optimism subscale. Respondents are asked to rate the extent of their agreement with these items using a 5-point Likert scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). The Cronbach's alpha estimates range between .70 and .80. Higher scores on the LOT-R show levels of optimism and lower scores on the LOT-R show levels of pessimism.

The Gratitude Questionnaire (GQ; McCullough, Emmons, & Tsang, 2002), is a 6-item self-report questionnaire designed to assess individual differences in the inclination to experience gratitude in daily life. Items are statements such as, "I am grateful to a wide variety of people". Respondents are asked to rate the extent of their agreement with these items using a 7-point Likert scale ranging from 1 (*strongly disagree)* to 7 (*strongly agree*). Previous studies have shown Cronbach's alpha between .76 and .84 (McCullough, Emmons, & Tsang, 2002). Higher scores on the GQ indicate higher levels of gratitude (McCullough et al., 2002).

The General Self-Efficacy scale (GSE; Jerusalem & Schwarzer, 1979) consists of 10 items measuring individuals' beliefs about their own abilities; for example, "I can always manage to solve difficult problems if I try enough". Respondents are asked to rate the extent of their agreement with these items using a 4-point Likert scale ranging from 1 (*not at all true*) to 4 (*exactly true*). In a sample of 23 nations, Cronbach's alphas from .76 to .90 were reported with the majority in the high .80s. Higher scores on the GSE represent greater levels of self-efficacy.

Stress and coping

The Perceived Stress Scale (PSS; Cohen & Williamson, 1988) is a 10-item self-report scale that measures an individual's evaluation of stressful situations in the past month, here with a focus on work stress (e.g., "In the last month, how often have you been upset because of something that happened unexpectedly?"). Respondents are asked to rate the extent of their agreement with these items using a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*). Higher scores on the PSS show greater levels of perceived stress. The internal reliability estimates reported are α=.78 (Cohen & Williamson, 1988).

The Brief COPE (Coping Orientation to Problems Encountered-Brief Version; Carver, 1997) consists of 28-items with 14 subscales designed to measure levels of coping. The 14 subscales are self-distraction, denial coping, active coping, substance use, emotional support,

instrumental support, behavioural disengagement, venting, positive reframing, planning, humour, acceptance, religion and self-blame (Carver, 1997). Respondents are asked to rate the extent of their agreement with these items using a 4-point Likert scale ranging from 1 (*I usually don't do this at all*) to 4 (*I usually do this a lot*). The Brief COPE subscales have shown variable levels of reliability in past research for example denial α = .64, drug use α = .9, behavioural disengagement α = .66, self-blame α = .64 (Carver, 1997).

Work coping variables

The Sense of Coherence Questionnaire (SoC; Antonovsky, 1993) is a 13-item measure consisting of three subscales. Five items measure comprehensibility, (e.g. "How often do you have the feeling that you are in an unfamiliar situation and don't know what to do?") four items measure manageability, (e.g. "Do you have the feeling that you're being treated unfairly?"), and four items measure meaningfulness of work, (e.g. "Until now your working life has had no clear goals"). Respondents are asked to rate the extent of their agreement with these items using a 7-point Likert scale ranging from1 (*never*) to 7 (*always*). Higher scores on the SoC show greater levels of sense of coherence. The Cronbach's alphas in 16 studies ranged from .74 to .91 (Antonovsky, 1993). The scale has been used in 33 languages in 32 countries and is deemed to be psychometrically sound (Antonovsky, 1993; Eriksson & Lindstorm, 2005).

The Work Locus of Control Scale (WLCS; Spector, 1988) is a domain specific 16-item measure of locus of control in the workplace. An example of an internal locus of control item is, ("Promotions are given to employees who perform well on the job"). An example of an external locus of control item is, ("Getting the job you want is mostly a matter of luck"). Respondents are asked to rate the extent of their agreement with these items using a 6-point Likert scale ranging from 1 (*disagree very much*) to 6 (*agree very much*). The internal

reliability coefficients ranged from .75 to .85 (Spector, 1988). Higher scores represent externality and lower scores represent internality in the work locus of control scale.

Measures of well-being and health

The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), is a short, 5-item instrument designed to measure global cognitive judgements of satisfaction with one's life (e.g." In most ways my life is close to ideal"). Respondents are asked to rate the extent of their agreement with these items using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Cronbach's alpha is reported as .76 indicating reasonable internal reliability. Higher scores on the SWLS indicate greater levels of life satisfaction.

The Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), measures the affective dimension of subjective well-being. The scale consists of 20 items, 10 measuring positive affect (e.g. "proud") and 10 negative affect ("irritable"). Participants rate the extent of their agreement with these items using a 5-point Likert scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Watson et al. (1988) found Cronbach's alpha coefficients for positive affect from .90 to .96, and for negative affect from .84 to .87 in different samples (Watson et al., 1988).

The General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988) is widely used in community and occupational settings as a measure of general psychological distress over the past few weeks. The scale consists of 12 items (e.g., "Have you recently felt constantly under strain?"). Respondents are asked to rate the extent of their agreement with these items using a 4-point Likert scale ranging from 1 (*better than usual*) to 4 (*much less than usual*). The reliability coefficients ranged from .78 to .95 in various studies (Goldberg & Williams, 1988). To allow easier comparisons with the other measures, scores were reversed so that higher scores on the GHQ-12 represent better levels of mental health.

Procedure

Volunteers from the academic staff group were requested via email and an article in a university staff online newsletter. All the scales described above were entered in a random order to online software. Questionnaires were completed anonymously and it was made clear to participants that by pressing the submit button at the end they were giving informed consent for their data to be used. The study received ethical approval from a university research ethics committee.

Results

To examine whether there were any differences due to gender, full-time or part-time employment, and level of seniority within the university and the measures of stress, well-being, and mental health a series of MANOVAs were conducted. An a priori alpha level of .05 two-tailed was set for the statistical tests. As no significant differences were found in terms of gender, full-time or part-time employment, and level of seniority within the university on the stress, well-being and mental health measures, the data were analysed as one data set. Analysis was undertaken using the statistical package SPSS for Windows version 19.

Factor analysis of the Brief COPE

As there is controversy in the literature about the number of factors in the Brief COPE Scale, it was subjected to an exploratory factor analysis as this is the practice in the stress literature when the cope scale is used (e.g. Sica, Novara, Dorz, & Sanavio, 1997). Four factors with eigenvalues greater than one were found which together accounted for 56.1% of the variance in responding and this was confirmed by the scree plots (Field, 2013). The coping strategy of religion was omitted from the analysis as it did not load on any factor. This was also reported to be the case by Carver et al. (1989).

Parallel analysis was also conducted as a check on the number of factors to extract from the parallel confirmatory analysis (PCA). Principal component analysis was used to extract the factors, followed by a varimax rotation. This analysis extracted four factors with eigenvalues greater than 1.0, which together accounted for 59.65% of the variance in responding. The Kaiser-Meyer-Olkin (KMO) was .74, higher than the recommended value of .6.which is a reliable criterion when there are less than 30 variables (Kaiser, 1974; cited in Field, 2013). The Bartlett's Test of Sphericity was significant, supporting the factorability of the correlation matrix and using 28 items would greatly reduce the participant to variable ratio (Bartlett, 1954; cited in Field, 2013). The parallel analysis suggested three factors in the Brief COPE as the eigenvalues were lower than in the PCA for these factors. However, the literature on the Brief COPE Scale tends to report four factors (Carver, 1997) so had the analysis used three factors, the results could not be compared with the existing stress literature and for this reason the four factor solution originally identified was used.

The four factors solution accounted for 59.65% of the variance in the data and was classified as follows:

1. Problem-focused coping, eigenvalue=3.17, α = .83, accounted for 24.34% of the variance and included planning coping strategy (.81), active coping strategy (.75), positive reframing strategy (.66), and acceptance (.65).

2. Emotion-focused coping, eigenvalue=1.91, α = .84, accounted for 14.70% of the variance and included instrumental support (.91), emotional support (.90), and venting (.61).

3. Dysfunctional coping, eigenvalue=1.52, α = .56, accounted for 11.66 % of variance and included self-distraction (.68), self-blame (.61), and substance use (.45).

4. Denial coping, eigenvalue=1.16, α = .57, accounted for 8.95 % of variance and included denial (.80), behavioural disengagement (.52), and humour (.46).

These four subscales of coping are used in the subsequent analysis.

Descriptive statistics for the sample

The means, confidence intervals, standard deviations, ranges and alpha coefficients for all the study variables are presented in Table 1. The alpha levels for all the measures apart from dysfunctional coping and denial coping are satisfactory being greater than or near to the recommended .70 (Pallant, 2005). Dysfunctional coping subscales ranged from .45 to .68, and for denial coping subscales ranged from .52 to .80. This was also reported by Carver (1997) with a sample of 186 individuals.

- Table 1 here -

Correlations of stress, coping styles, work-coping variables and character strengths with subjective well-being and mental health

To ease interpretation, the main correlations of interest are displayed in Table 2. This shows that stress was negatively correlated with SWL, PA, and GHQ, and positively associated with NA. Problem-focused coping was positively associated with SWL, PA, and GHQ, and was negatively associated with NA. Emotion-focused coping was positively associated with SWL and PA, but no relationship was found with NA and GHQ. Dysfunctional coping was positively associated with NA and negatively associated with GHQ, and no relationship was found with SWL and PA. No significant relationship was found between denial coping, satisfaction with life, positive affect, negative affect and mental health. Work locus of control was positively associated with SWL and PA but no relationship was found with NA and GHQ. Sense of coherence was positively associated with SWL, PA, and GHQ, and negatively associated with NA. Hope agency, hope pathway, total hope, optimism, gratitude and self-efficacy positively associated with SWL, PA, and GHQ, and negatively associated with NA.

- Table 2 here -

Correlations between all the study variables are displayed in Table 3. It can be seen that stress shows a significant negative association with problem-focused coping and a positive association with dysfunctional coping, and negative associations with work-coping variables (work locus of control and sense of coherence), character strengths of hope, hope agency, hope pathway, optimism, gratitude, and self-efficacy, and subjective well-being (satisfaction with life and positive affect), and mental health (GHQ). Stress also shows a significant positive association with negative affect.

- Table 3 here -

Exploring work-coping variables as predictors of stress

Pre-analysis checks on the data were undertaken and showed that there were no major violations of the assumptions of normality, linearity and no outliers were identified (Howitt & Cramer, 2011). Collinearity diagnosis indicated that no correlations between independent variables were above .8; variance inflation factors were all below 10; and the tolerance statistics were above .1, hence suggesting multicollinearity was not a problem in the data (Field, 2013). A power calculation (Cohen, 1988) for power of .80 and a medium effect size indicated a minimum sample size of 186 and this is met (Tabachnik & Fidell, 2006).

A standard multiple regressions analysis was conducted to examine the relationship between work-coping variables (work locus of control and sense of coherence) and stress. The results indicated that the overall model accounts for 24% of the variance in stress scores, $R^2 = .24$, $\Delta R^2 = .23$ $F(2,213) = 33.53$, $p < .001$. As can be seen in Table 4, sense of coherence was the unique statistically significant predictor of stress at work suggesting that academics experiencing a low sense of coherence at work were more stressed.

-Table 4 here-

Exploring coping styles as predictors of stress

A multiple regressions analysis examined the ability of coping styles (problem-focused coping, emotion-focused coping, dysfunctional coping and denial coping) to predict stress and the results are included in Table 4. The overall model accounts for 22% of the variance in stress scores, $R^2 = .22$, $\Delta R^2 = .21$, $F(4,211) = 15.25$, $p < .001$. Problem-focused coping negatively predicts stress suggesting that participants using problem-focussed coping experience lower levels of stress. Dysfunctional coping is a positive predictor of stress and emotion-focused coping and denial coping styles were not significant unique predictors in the model.

Exploring the relationships between stress and character strengths with subjective well-being and mental health

To test whether character strengths influence the relationship between stress and well-being and mental health four hierarchical multiple regressions were computed, one for each health measure. Hierarchical regression tests the different stages in a model and indicates the contribution made by different variables (Field, 2013). In each regression, step 1 examined the relationship between stress and one of the well-being measures. At step 2 the character strengths (hope agency, hope pathway, optimism, gratitude and self-efficacy) were added to the model to assess their effect. Finally, step 3 tested whether character strengths interacted with stress to moderate the relationship between stress and the well-being measures. This required the creation of interaction variables (stress x hope agency, stress x hope pathway, stress x optimism, stress x gratitude and stress x self-efficacy).

First the independent variables were centred to address collinearity between the main effects and interaction effects before being entered into the regression model. Next interaction terms between stress and each character strength were created (Aiken & West, 1991). The values of the interaction variables (character strengths) were chosen at above and below the median (Howitt & Cramer, 2011). Simple regression lines were generated to

introduce these values into the regression equation to represent the relationship between stress, character strengths, and subjective well-being and mental health (GHQ) at above and below the median levels of the moderator variables. If the interactions of stress and character strengths with subjective well-being and mental health were significant, a simple slope analysis was then computed (Aiken & West, 1991).

-Table 5 here -

Satisfaction with life

It can be seen from Table 5 that the inclusion of the character strengths (hope agency, hope pathway, optimism, gratitude, and self-efficacy) at step 2 explained a greater part of the variance in satisfaction with life compared with stress alone, with the second model accounting for 49% of the variance in SWL ($F (6, 208) = 33.83$, $p < .001$) in comparison with 16% of the variance accounted for by stress alone ($F (1, 214 = 41.09$, $p < .001$). In step 3, including the moderator variables (stress x hope agency, stress x hope pathway, stress x optimism, stress x gratitude, and stress x self-efficacy) explained 51% of the variance in SWL ($F (11, 203) = 18.92$, $p < .001$). The change in R^2 shows 33% was added to the model by the addition of character strengths at step 2 and 2% was added to the model by adding moderator variable at step 3 in SWL. None of the interaction terms were statistically significant, suggesting that character strengths do not moderate the relationship between stress and satisfaction with life. In terms of significant unique predictors, hope agency, hope pathway, gratitude, optimism, and self-efficacy were the strongest positive predictors of satisfaction with life, in that order of magnitude, while levels of perceived stress negatively predicted SWL.

- Table 6 here -

Positive affect

While stress was a significant negative predictor of PA at step 1 as shown in Table 6, including character strengths at step 2 accounted for 54% of the variance in positive affect (F (6, 208) = 41.02, p <.001) in comparison with 20% of the variance accounted for by stress alone (F (1, 213) = 54.67, p <.001). In step 3, the addition of the moderator variables accounted for 54% of the variance in PA (F (11, 203) = 22.06, p < .001) suggesting little change. The change in R^2 shows that adding character strengths increased the variance accounted for by 34%. However adding the stress x character strengths interactions did not increase the variance accounted for by the model. Character strengths did not moderate the relationship between stress and positive affect. In terms of significant predictors, gratitude, hope agency, and self-efficacy positively predicted positive affect in that order of magnitude, while stress was a negative predictor.

-Table 7 here -

Negative affect

It can be seen from Table 7 that stress was a significant positive predictor of negative affect (NA) accounting for 32% of the model at step 1(F (1 , 213) = 98.22, p <.001). The inclusion of character strengths at step 2 accounted for 39% of the variance (F (6, 208) = 22.07, p <.001), a small increase. In step 3 the inclusion of moderator variables (stress x hope agency, stress x hope pathway, stress x optimism, stress x gratitude, and stress x self-efficacy), accounted for 40% of the variance in NA (F (11, 203) = 12.05, p < .001). The R^2 change shows 7% was added to the model by the addition of character strengths at step 2 and 1% was added to the model by adding potential moderator variables at step 3. None of the character strengths moderated the relationship between stress and NA. In terms of significant predictors, gratitude, hope agency, self-efficacy, and optimism were negative significant predictors of negative affect while stress was a positive predictor.

- Table 8 here -

Mental health

For mental health (GHQ), stress was a significant negative predictor accounting for 32% of the variance at step 1, (F (1, 213) = 101.94, p <.001) as summarised in Table 8. Including character strengths at step 2 increased the variance accounted for to 40% (F (6, 208) = 22.96, p <.001). It can be seen from Table 8 that the inclusion of moderator variables in step 3 (stress x hope agency, stress x hope pathway, stress x optimism, stress x gratitude, and stress x self-efficacy), explained 42% of the variance in GHQ (F (11, 203) = 12.05, p < .001) a small increase. Changes in R^2 shows 8% was added to the second model by the addition of character strengths and 2% was added to the third model by adding moderator variables in GHQ. Optimism was a significant moderator of the relationship between stress and mental health and this relationship is graphed in Figure 4. For both groups (high and low optimism) as stress increases, mental health scores decline indicating poorer mental health. Plotting the analysis (see Figure 4) showed that while optimism moderated the relationships between perceived stress and mental health in both groups, the relationship was weaker for academics who reported higher optimism (R = .45) than for academics who reported lower levels of optimism (R = .58). At lower levels of stress, the high optimism group report poorer mental health than the low optimism group. However, at higher levels of stress, the high optimism group report better mental health than the low optimism group. These relationships are displayed in Figure 4. In terms of significant predictors only gratitude positively predicted mental health, while stress was a negative predictor.

- Figure 4 here -

Discussion

There were no significant differences between female and male academics in their levels of perceived stress, subjective well-being, or health in this study, supporting the findings on stress from Adebiyi (2013) but contrary to Archibong et al. (2010) and Kinman and Wray

(2013). Levels of perceived stress were no different for full-time or part-time staff. However, Barnes and O'Hara (1999) found that part-time academics found university management policies stressful. More recently, Kinman and Wray (2013) found that full-time academic staff reported more stress compared with part-time or hourly paid staff. The present study assessed overall stress levels so cannot comment on particular stressors. Levels of perceived stress did not differ significantly between junior and senior academics. These results are supported by previous research (Richard & Krieshok, 1989). However, some studies have reported higher stress levels in junior compared with senior academics (e.g., Abousierie, 1996; Gmelch, Wilke, & Lovrich, 1986; Winefield & Jarrett, 2001). These studies do predate the changes in academia that are reported as being stressful (Archibong et al., 2010; Kinman, 2008).

In terms of coping styles, there was no statistically significant difference between male and female academics, although there was a tendency based on comparing the mean scores for female academics to use more emotion-focused coping and men denial coping when exposed to stress. Using emotion-focused coping in situations where individuals have little control of the stress has been shown to be adaptive behaviour (Folkman & Lazarus, 1985).

Stress, subjective well-being and mental health

Hypothesis one, that stress will have a significant negative relationship with subjective well-being and symptomatic mental health (GHQ) was supported. High stress scores are found to be predictive of lower life satisfaction, lower positive affect, poorer mental health (GHQ) and higher negative affect. Kinman (2008) also reported that increasing levels of stress are often associated with decreasing levels of psychological health and well-being among academics in UK universities.

Stress, coping style and work-coping variables

As hypothesised, problem-focused coping was predictive of lower stress scores and dysfunctional coping predicted higher stress scores. Folkman (1997) reported that problem-focused coping provided solutions, thus altering stressful situations. Dysfunctional coping consisted of self-distraction, self-blame and substance use (Carver, 1997). Contrary to prediction, emotion-focussed coping was not a predictor of lower stress and denial coping was not associated with higher stress levels.

The hypothesis that work-coping variables will predict stress at work was partially supported with lower levels of sense of coherence predicting higher stress. Sense of coherence involves three components: comprehensibility, manageability and meaningfulness of work tasks (Antonovsky, 1993). Academics identifying a low level of sense of coherence at work are more stressed and this was supported by previous research (Antonovsky, 1993; Kinman, 2008). Sense of coherence has also been associated with more positive coping with stress at work (Albertsten, Nielsen, & Borg, 2001). For work locus of control, the results did not support the hypothesis in that work locus of control had no significant relationship with stress. Much of an academic's work is still fairly autonomous and this may help to explain this result.

Character strengths

This is the first study to investigate whether particular character strengths could make an important contribution to reducing stress at work and increasing emotional well-being and mental health among academics. The hypothesis was that character strengths would make a positive contribution and this was largely supported. Having higher levels of character strengths was associated with reporting lower stress scores as hypothesised.

Hope agency positively predicted satisfaction with life and positive affect and negatively predicted negative affect. Hope agency reflects individuals' determination to achieve their goals and as such involves positive thinking (Snyder et al., 1991). Hope

pathways predicted satisfaction with life. Hope pathways evaluates how confident individuals are of their ability to produce routes to achieving their goals and goal satisfaction is important for life satisfaction. Previous research by Snyder et al. (2002) also found that individuals with higher hope showed more positive affect than lower hope individuals. Research with university students found hope to be a significant predictor of positive affect among college students (Ciarrochi, Heaven, & Davies, 2007) and higher levels of hope agency predicted life satisfaction (Chang,1998). Hope agency thinking was not a predictor of symptomatic mental health (GHQ) in this study, although previous research found that it predicted well-being, and mental health (Peterson, 2000). These results were replicated with academic staff in the present study except with the mental health variable.

Optimism was positively associated with SWL, positive affect and mental health (GHQ) and negatively associated with negative affect as predicted. However, optimism was only a predictor of life satisfaction. This concurs with previous research (Wong & Lim, 2009) but not with Diener (2000) who found that optimism predicted increased positive affect and lower negative affect as well as higher life satisfaction although this was with student samples. Although optimism was positively associated with mental health (GHQ), it was not a unique predictor of mental health. However, the results from testing possible interactions that character strengths may have had with stress to influence health showed that optimism did moderate the relationship between stress and mental health. Academics with higher levels of optimism, when stress is high report better mental health. However, at lower levels of stress, the high optimism group report poorer mental health than the low optimism group, suggesting that optimism is beneficial when stress is high but less so when stress is low. This result can be explained perhaps by the nature of optimism. Research in health care has shown that some individuals are prone to experiencing unrealistic optimism especially in low stress situations. For example many smokers display unrealistic optimism in that they acknowledge

that smoking causes cancer and cancer kills but they do underestimate the risk of it happening to them (Weinstein, Marcus, & Moser, 2005) and this allows them not to worry about the long term effects of their smoking.

Gratitude was perhaps the most interesting result, as higher levels of gratitude were predictors of SWL, positive affect, mental health and it was a negative predictor of negative affect. This suggests that grateful individuals experience better subjective well-being and mental health. Grateful individuals have been shown when faced with adversity to reframe the situation adopting the perspective that the situation could have been worse and thus they minimise their stress (Watkins, Scheer, Ovnicek, & Kolts, 2006; Wood, Froh, & Geraghty, 2010). Grateful thinking allows experiences to be savoured more and in this way builds satisfaction and positive affect (Sheldon & Lyubormirsky, 2006). Other research on student samples has found that gratitude was a predictor of well-being (Froh et al., 2009).

Self-efficacy was a positive predictor of SWL, positive affect and a negative predictor of negative affect, suggesting that individuals with higher levels of self-efficacy experience higher levels of subjective well-being and in this study they also reported lower stress levels. Individuals high in self-efficacy are confident of their ability to deal with situations so the relationship with lower stress scores and higher well-being for individuals higher in self-efficacy is perhaps unsurprising. Similarly, Bandura (1994) noted that high levels of personal self-efficacy reduced stress and increased well-being. Previous research by Scholz et al. (2002), also reported that higher self-efficacy predicted higher well-being and health although this was in different work environments.

Limitations

The results of this study apply to university academic staff therefore may not be generalised to other university employees. While the sample was large enough for the analyses, all the participants were recruited from one post-92 UK University so that the findings may not

generalise to academic staff in other different types of universities. It is also a cross-sectional study and therefore direct causation cannot be ascertained. The factor structure of the Brief COPE Scale is slightly problematic as is its internal reliability. The structure used here matches that used by other researchers and thus allowed comparisons with the existing literature but it is a concern and requires further research.

Summary and Implications

To answer the question posed in the title, it appears that academics with higher levels of gratitude, self-efficacy, hope, including agency and pathways thinking, and optimism report lower levels of stress at work and higher levels of well-being as measured by higher life satisfaction, higher positive affect and lower negative affect. These academics are more likely to report using problem-focussed coping and this is associated with experiencing less stress while dysfunctional coping styles are associated with increased stress. Problem-focussed coping skills can be developed via training courses. Gratitude, hope, and self-efficacy are character strengths that can also be developed using positive psychology interventions (Emmons & McCullough, 2003; Killen & Macaskill, 2014). This then provides new approaches to stress management training to augment the more traditional approaches. Peterson and Park (2006) suggest that character strengths in employees can and should be developed by institutions as they can lead employees to be more productive and profitable. Perhaps more importantly as shown here, higher levels of character strengths can help employees cope better with the stress that is inevitably a part of academic life.

References

Abousierie, R. (1996). Stress, coping strategies, and job satisfaction in university academic staff. *Educational Psychology, 16* (1), 49-56.

Adebiyi, R. A. (2013). Occupational stress among academic staff of University Ekiti State University Ado- Ekiti. *European Scientific Journal, 9* (4), 202-208.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Thousand Oaks, CA: Sage.

Albertsten, K., Nielsen, M. L., & Borg, V. (2001). The Danish psychosocial environment and symptoms of stress: the main mediating, and moderating role of sense of coherence. *Work and Stress, 15* (3), 241-283.

Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science and Medicine, 36* (3), 725-733.

Archibong, I. A., Bassey, A. O., & Effiom, D. O. (2010). Occupational stress sources among university academic staff. *European Journal of Educational Studies, 2* (3), 217-225.

Aspinwall, L. G., & Leaf, S. L. (2002). Prospects, pitfalls, and plans: A proactive perspective on social comparison activity. *European Review of Social Psychology, 12*, 267-298.

Bandura, A. (1994). *Self-efficacy: The exercise of control*. New York: Freeman & Company.

Barnes. N., & O'Hara, S. (1999). Managing academics on short-term contracts. *Higher Education Quarterly, 53* (3), 229-239.

Carmel, S., & Bernstein, J. (1989). Trait-anxiety and sense of coherence: A longitudinal study. *Psychological Reports, 56,* 221-222.

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.

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioural Medicine, 4* (1), 92-100.

Chang, E. C. (1998). Hope, problem-solving ability, and coping in a college student population: Some implications for theory and practice. *Journal of Clinical Psychology, 54* (7), 953-962.

Ciarrochi, J., Heaven, P. C., & Davies, F. (2007). The impact of hope, self-esteem, and attributional style on adolescents' school grades and emotional well-being: A longitudinal study. *Journal of Research in Personality, 41*, 1161-1178.

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the U.S. In S. Spaceman, & S. Oskamp (Eds.), *Social Psychology of Health*. New York: Sage.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985).The satisfaction with life scale. *Journal of Personality Assessment, 49* (1), 71-75

Diener. E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125* (2), 276-302.

Diener, E. (2000). Subjective well-being: The science of happiness and proposal for a national index. *American Psychologist, 55* (1), 34-43.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377-389.

Emmons, R. A., & McCullough, M. E. (2004). *The psychology of gratitude.* New York: Oxford University Press.

Elo, A. L., Ervasti, J., Kuosma, E., & Mattila, P. (2008). Evaluations of an organisational stress management program in a municipal public works organisations. *Journal of Occupational Health Psychology, 13* (1), 10-23.

Eriksson, M., & Lindstrom, B. (2005). Validity of Antonovsky's sense of coherence scale: A systematic review. *Journal of Epidemiology and Community Health, 59*, 460-466.

Field, A. (2013). *Discovering statistics using IBM SPSS ,4th edition*. London: Sage.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150-170.

Folkman, S. & Lazarus, R. S. (1988).Coping as a mediator of emotion. *Journal of Personality and Social Psychology*, *54* (3), 466-475.

Folkman, S. (1997). Positive psychological states and coping with severe stress. *Social Science and Medicine, 45*, (8), 1207-1221.

Froh, J. J, Kashdan, T. B, Ozimkowski, K. M, & Miller, N. (2009). Who benefits the most from a gratitude intervention in children and adolescents? Examining positive affect as a moderator. *The Journal of Positive Psychology, 4* (5), 408-422.

Gmelch, W. H., Wilke, P. K., & Lovrich, N. P. (1986). Dimensions of stress among university faculty: Factor-analytic results from a national study. *Research in Higher Education*, *24*, 266-286.

Gmelch, W. H., & Burns, J. S. (1994). Sources of stress in academic department chairpersons. *Journal of Educational Administration*, *32* (1), 79-94.

Goldberg, D. P., & Williams, P. (1988). *A user's guide to the GHQ*. London: NFER.

Howitt, D., & Cramer, D. (2011). *Introduction to SPSS statistics in psychology.5th edition,* London: Prentice Hall, Pearson.

Jacobs, P. A., Tytherleigh, M. Y., Webb, C., & Cooper, C. L. (2010). Breaking the mould: The impact of working in a gender-congruent verses gender-incongruent role on self-reported sources of stress, organisational commitment, and health in U.K. universities. *International Journal of Stress Management, 17* (1), 21-37.

Johnson, S. J., Batey, M., & Holdsworth, L. (2009). Personality and health: The mediating role of trait emotional intelligence and work locus of control. *Personality and Individual Differences, 47,* 470-475.

Killen, A. & Macaskill, A. (2014). Using a gratitude intervention to enhance well-being in older adults. *Journal of Happiness Studies*. Published online 2014. http://link.springer.com/article/10.1007/s10902-014-9542-3

Kinman, G. (1998). *Pressure points: A survey into the causes and consequences of occupational stress in UK academic and related staff*. London: Association of University Teachers.

Kinman, G. (2008). Work stressors, health and sense of coherence in UK academic employees. *Educational Psychology, 7,* 823-835.

Kinman, G., & Wray, S. (2013). Higher stress: A survey of stress and well-being among staff in higher education. *University and College Union,* 1-52.

Miller, T. A., & McCool, S. F. (2003).Coping with stress in outdoor recreational settings: An application of transactional stress theory. *Leisure Science*, *25*, 257-275.

Lazarus, R. S. (1990). Theory-based stress measurement. *Psychological Inquiry, 1* (1), 3-13.

McCullough, M. E., Emmons, R. A., & Tsang, J. (2002).The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*, 112-127.

NICE. (2009). *Promoting mental well-being through productive and health working conditions: Guidance for employees.* NICE public health guidance 22: Promoting mental well-being at work, 1-41.

Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS.* London: Open University Press.

Park, N., Peterson, C., & Seligman, M. E. (2004). Strength of character and well-being: A closer look at hope and modesty. *Journal of Social and Clinical Psychology*, *23* (5), 628-634.

Park, N., & Peterson, C. (2009). Character strengths: Research and practice. *Journal of College and Character, 4*, 1-10.

Peterson, C. (2000). The future of optimism. *American Psychologist, 55* (1), 44-55.

Peterson, C., & Park, N. (2006).Character strengths in organizations. *Journal of Organizational Behaviour, 27* (11), 49-54.

Peterson, C., & Seligman, M. E. (2004).*Character strengths and virtues: A handbook and classification.* New York: American Psychological Association and Oxford University Press.

Rutter, H., Herzberg, J., & Paice, E. (2002). Stress in doctors and dentists who teach. *Medical Education, 36*, 543-549.

Scheier, M. F., & Carver, C. S. (1992). 'Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update'. *Cognitive Therapy and Research, 16* (2), 201-228.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67* (6), 1063-1078.

Scholz, U., Gutiérrez-Doña, B., Sud, S., & Schwarzer, R. (2002).Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment, 18* (3), 242-251.

Seligman, M. E., & Csikszentmihalyi, M. (2000).Positive psychology: An introduction. *American Psychologist, 55* (1), 5-14.

Sharpley, C. F., Reynolds, R., Acosta, A. & Dua, J. K. (1996). The presence, nature, and effects of job stress on physical and psychological health at a large Australian university. *Journal of Educational Administration, 34* (4), 73-86.

Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology, 1* (2), 73-82.

Sica, C., Novara, C., Dorz, S., & Sanavio, E. (1997). Coping strategies: Evidence for cross-cultural differences? A preliminary study with the Italian version of coping orientations to problems experienced (COPE). *Personality and Individual Differences*, 23(6), 1025-1029.

Snyder, C.R., Harris, C., Anderson, J. R., Holleran, S.A., Irving, L. M., Sigmon, S.T., et al. (1991). The will and the ways: Development and validation of an individual differences measure of hope. *Journal of Personality and Social Psychology, 60,* 570-585.

Snyder, C. R. (1995). Conceptualising, measuring, and nurturing hope. *Journal of Counselling* & *Development, 73*, 355-360.

Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry, 13,* 249-275.

Snyder, C. R., Shorey, H. S., Cheavens, J., Pulvers, K. M., Adams, V. H., & Wiklund, C. (2002). Hope and academic success in college. *Journal of Educational Psychology, 9* (4) 820-826.

Snyder, C. R., Lopez, S. J., Shorey, H. S., Rand, K. L., & Feldman, D. B. (2003). Hope theory, measurements, and applications to school psychology. *School Psychology Quarterly*, *18* (2) 122-139.

Spector, P. E. (1982). Behaviour in organizations as a function of employee's locus of control. *Psychological Bulletin, 91,* 482-497.

Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the job satisfaction survey. *American Journal of Community Psychology, 13,* 693-713.

Spector, P. E. (1988). Development of the work locus of control scale. *Journal of Occupational Psychology, 61,* 335-340.

Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behaviour and Personality, 31*, 431-451.

Watkins, P., Scheer, J., Ovnicek, M., & Kolts, R. (2006). The debt of gratitude: Dissociating gratitude and indebtedness. *Cognition and Emotion, 20* (2), 217-241.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54* (6), 1063-1070.

Williams, D. M. (2010). Outcome expectancy and self-efficacy: Theoretical implications of an unresolved contradiction. *Personality and Social Psychology Review, 14* (4), 417-425.

Winefield, A. H., & Jarrett, R. (2001). Occupational stress in university staff. *International Journal of Stress Management, 8,* (4), 285-298.

Wood, A. M., Froh, J. J., & Geraghty, A. W. A. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical Psychology Review, 30* (7), 890-905.

Wong, S. S., & Lim, T. (2009). Hope versus optimism in Singaporean adolescents: Contributions to depression and life satisfaction. *Personality and Individual Differences, 46,* 648-652.

Weinstein, N. D., Marcus, S. E., & Moser, R. P. (2005). Smokers' unrealistic optimism about their risk. *Tobacco Control, 14,* 55-59.

Table 1. Means, confidence intervals, standard deviations, ranges and alpha coefficients for all the study variables (*N*=216).

Variable	Mean	$CI_{95\%}$	*SD*	Range	α
Stress	18.75	17.97, 19.52	5.75	4-32	0.81
Problem-focused coping	23.84	17.27, 18.27	4.38	9-32	0.83
Emotion-focused coping	15.01	14.47, 15.54	3.98	6-24	0.84
Dysfunctional coping	12.58	12.21, 12.94	2.72	7-23	0.54
Denial coping	10.09	9.77, 10.42	2.43	6-17	0.57
Work locus of control	56.81	55.73, 57.90	8.10	25-81	0.63
Sense of coherence	55.57	54.56, 56.59	7.56	28-73	0.74
Hope agency	25.74	25.20, 26.26	3.93	11-32	0.80
Hope pathway	24.61	24.02, 25.19	4.36	8-32	0.85
Hope	50.35	49.33, 51.37	7.60	23-64	0.87
Optimism	21.98	21.43, 22.52	4.06	10-30	0.84
Gratitude	35.32	34.62, 36.02	5.22	16-42	0.71
Self-efficacy	30.77	30.23, 31.31	4.04	19-40	0.90
Satisfaction with life	24.90	24.07, 25.73	6.19	5-35	0.87
Positive affect	34.45	33.44, 35.46	7.53	16-50	0.90
Negative affect	19.36	18.45, 20,27	6.82	10-46	0.86
Mental health	35.33	34.55, 36.10	5.78	14-45	0.89

Table 2. Correlations of stress, coping styles, work-coping variables and character strengths with subjective well-being and mental health (*N*=216).

Variable	SWL	PA	NA	GHQ
Stress	-.40**	.-45**	.56**	-.57**
Problem-focused coping	.46**	.54**	-.27**	.35**
Emotion-focused coping	.24**	.29**	-.05	.13
Dysfunctional coping	-.10	-.12	.32**	-.15*
Denial coping	-.05	.05	.16	.11
WLC	.20**	.18**	-.05	.10
SoC	.53**	.43**	-.54**	.47**
Hope agency	.56**	.59**	-.21**	.32
Hope pathway	.44**	.56**	-.30**	.32**
Hope	.55**	.43**	-.54**	.47**
Optimism	.56**	.57**	-.40**	.38**
Gratitude	.52**	.54**	-.35**	.40**
Self-efficacy	.50**	.56**	-.38**	.41**

*Note. *p<.05 **p<.01 ***p<.001.* Satisfaction with life (SWL), positive affect (PA), negative affect (NA), mental health (GHQ), work locus of control (WLC), sense of coherence (SoC).

Table 3. Correlations between all the study variables (*N*=216).

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.Stress	-.43**	-02	.19**	.05	-.17*	-.48**	-.38**	-.32**	-.38**	-.44**	-.29**	-.45**	-.40**	-.45**	.56**	-.57**
2.Pf coping		.32**	-.02	.03	.25**	.38**	.65**	.60**	.60**	.50**	.40**	.60**	.46**	.54**	-.27**	.35**
3.Ef coping			.16*	.09	.09	.03	.25**	.30**	.17*	.15*	.30**	.19**	.24**	.29**	-.05	.13
4.Dy coping				.27**	-.11	-.31**	-.09	-.04	-.13	-.19**	-.07	-.14*	-.09	-.11	.32**	-.15*
5.Denial coping					.07	-.12	-.03	-.05	-.01	-.05	-.09	-.02	-.05	.05	.15*	-.11
6.WLC						.16*	.26**	.20**	.28**	.19**	.19**	.26**	.20**	.18**	-.05	.10
7.SoC							.47**	.38**	.47**	.57**	.43**	.43**	.53**	.43	-.54**	.47**
8.Hope								.91**	.93**	.68**	.44**	.69**	.55**	.62**	-.28**	.35**
9.Hope agency									.68**	.60**	.38**	.64**	.56**	.59**	-.21**	.32**
10.Hope pathway										.65**	.43**	.62**	.44**	.55**	-.30**	.32**
11.Optimism											.46**	.53**	.55**	.57**	-.40**	.38**
12.Gratitude												.32**	.52**	.54**	-.35**	.40**
13.Self-efficacy													.50**	.56**	-.38**	.41**
14.SWL														.55**	-.39**	.54**
15.PA															-.38**	.52**
16.NA																.60**
17.GHQ																

*Note.*p < .05 **p <.01* Problem-focused (Pf), Emotion-focused (Ef), Dysfunctional (Dy), Denial (D), Work Locus of Control (WLC), Sense of Coherence (SoC), Satisfaction With Life (SWL), Positive Affect (PA), Negative Affect (NA), Mental Health (GHQ).

Table 4. Multiple regressions of work-coping variables with stress and coping styles with stress (*N*=216).

Variable	B	β
Work-coping		
Sense of coherence	-6.24	-.37***
Coping Styles		
Problem-focused coping	-.46	-7.14***
Dysfunctional coping	.16	2.49*

*Note. *p<.05 **p<.01 ***p<.001*

Table 5. Hierarchical regressions of stress and the character strengths predicting satisfaction with life (*N*=216).

Variables	B	SEB	β	R^2	R^2*change*
Step1					
Stress	-.43	.07	-.40***	.16	.16
Step 2					
Stress	-.13	.06	-.12*	.49	.33
Hope agency	.49	.12	.31***		
Hope pathway	.23	.11	.17*		
Optimism	.33	.11	.21*		
Gratitude	.30	.07	.30***		
Self-efficacy	.22	.11	.14*		
Step 3					
Stress	-.16	.06	-.15*	.51	.02
Hope agency	.39	.13	.25**		
Hope pathway	-.22	.12	.15		
Optimism	.33	.12	.22**		
Gratitude	.32	.07	.27***		
Self-efficacy	.25	.11	.17*		
Stress X hope agency	.86	.47	.14		
Stress X hope pathway	-.29	.56	.04		
Stress X optimism	.22	.48	.04		
Stress X gratitude	.20	.35	.04		
Stress X self-efficacy	-.35	.43	-.06		

*Note.*p <.05**p <.01***p <.001.*

Table 6 Hierarchical regressions of stress and character strengths predicting positive affect (*N*=216).

Variables	B	SEB	β	R^2	R^2*change*
Step1					
Stress	-.59	.08	-.45***	.20	.20
Step 2					
Stress	-.20	.07	-.16***	.54	.34
Hope agency	.48	.14	.25***		
Hope pathway	.01	.13	.01		
Optimism	.23	.13	.13		
Gratitude	.41	.08	.28***		
Self-efficacy	.33	.13	.17**		
Step 3					
Stress	-.19	.08	-.15**	.54	.003
Hope agency	.53	.15	.28**		
Hope pathway	.02	.14	.01		
Optimism	.22	.13	.12		
Gratitude	.42	.08	.29***		
Self-efficacy	.31	.13	.16*		
Stress X hope agency	-.40	.55	-.05		
Stress X hope pathway	-.15	.65	-.02		
Stress X optimism	.09	.56	.01		
Stress X gratitude	-.17	.40	-.03		
Stress X self-efficacy	.41	.51	.06		

*Note.*p <.05 **p <.01 ***p <.001.*

Table 7. Hierarchical regressions of stress and character strengths predicting negative affect (*N*=216).

Variables	B	SEB	β	R^2	R^2*change*
Step1					
Stress	.59	.08	.45***	.32	.32
Step 2					
Stress	.20	.07	.16***	.39	.07
Hope agency	.48	.14	-.25*		
Hope pathway	.01	.13	-.01		
Optimism	.23	.13	-.13*		
Gratitude	.41	.08	-.28**		
Self-efficacy	.33	.13	-.17*		
Step 3					
Stress	.19	.08	.15	.40	.01
Hope agency	.53	.15	-.28*		
Hope pathway	.02	.14	-.01		
Optimism	.22	.13	-.12		
Gratitude	.42	.08	-.29**		
Self-efficacy	.31	.13	-.16*		
Stress X hope agency	-.40	.55	-.05		
Stress X hope pathway	-.15	.65	-.02		
Stress X optimism	.01	.56	-.01		
Stress X gratitude	-.17	.40	-.03		
Stress X self-efficacy	.41	.51	-.06		

*Note.*p <.05**p <.01***p <.001.*

Table 8. Hierarchical regressions of stress and character strengths predicting mental health (*N*=216).

Variables	B	SEB	β	R^2	R^2*change*
Step1					
Stress	-.57	.06	-.57***	.32	.32
Step 2					
Stress	-.44	.06	-.44***	.40	.08
Hope agency	.06	.12	.04		
Hope pathway	-.12	.11	-.09		
Optimism	.06	.11	.04		
Gratitude	.25	.07	.22***		
Self-efficacy	.20	.11	.14		
Step 3					
Stress	-.43	.07	-.42***	.42	.02
Hope agency	.01	.13	.07		
Hope pathway	-.07	.12	.05		
Optimism	.002	.11	.002		
Gratitude	.21	.07	.19*		
Self-efficacy	.20	.11	.14		
Stress X hope agency	-.25	.48	-.04		
Stress X hope pathway	-.71	.56	-.11		
Stress X optimism	1.09	.49	.19*		
Stress X gratitude	.26	.35	.05		
Stress X self-efficacy	.10	.44	.02		

*Note.*p <.05**p <.01***p <.001.*

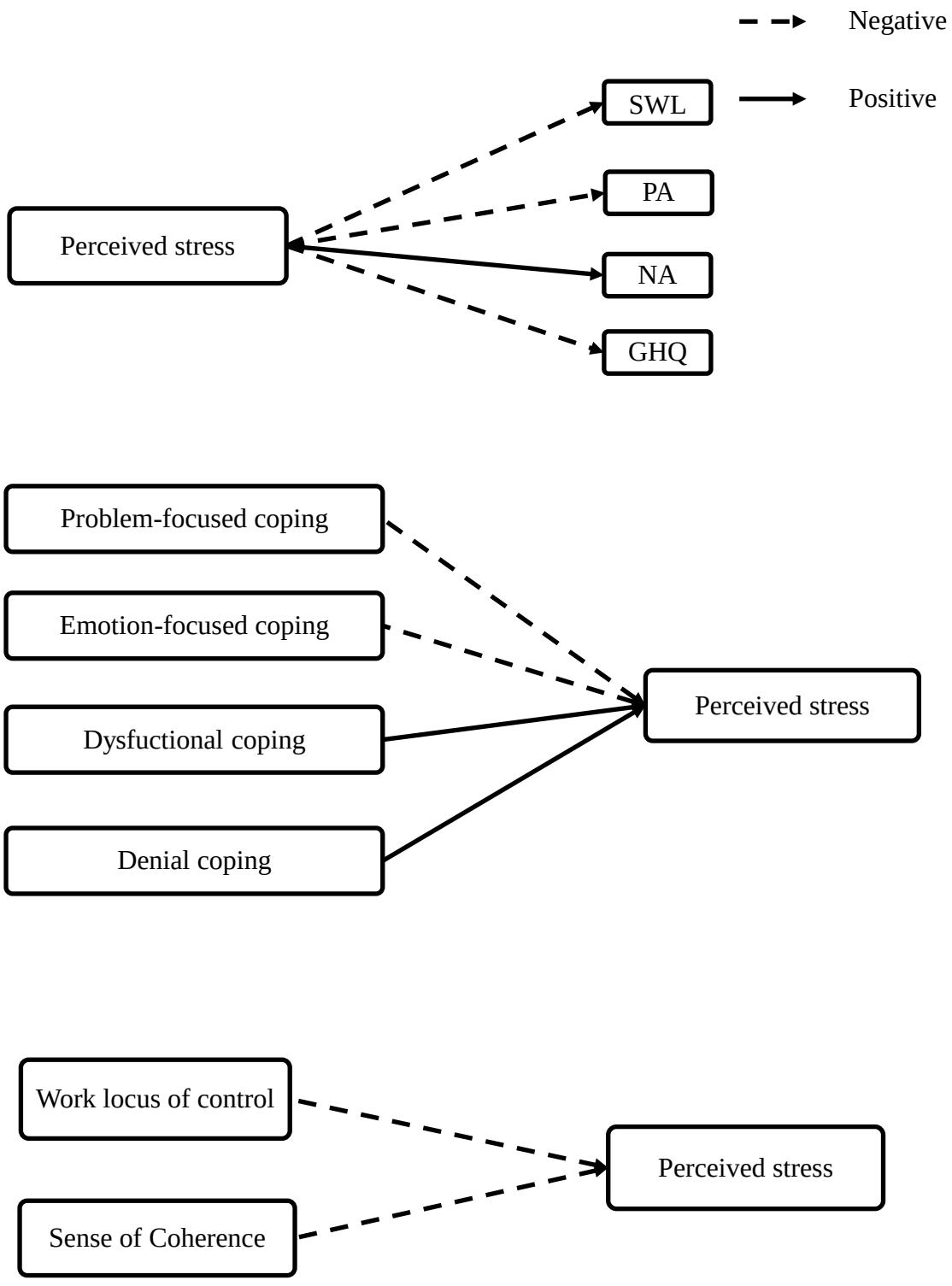


Figure 1. The hypothesied relationships between stress and well-being (SWL= satisfaction with life, PA = positive affect, NA = negative affect, GHQ = mental health); coping styles and stress; and work-coping variables and stress.

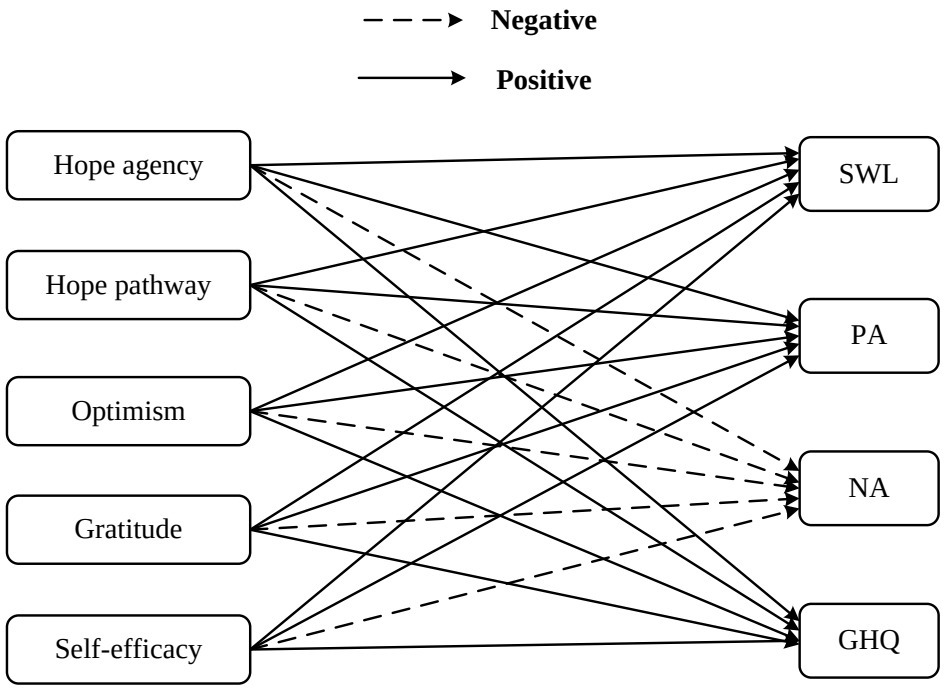


Figure 2. The hypothesised relationships between character strengths and well-being (SWL, PA, NA) and mental health (GHQ).

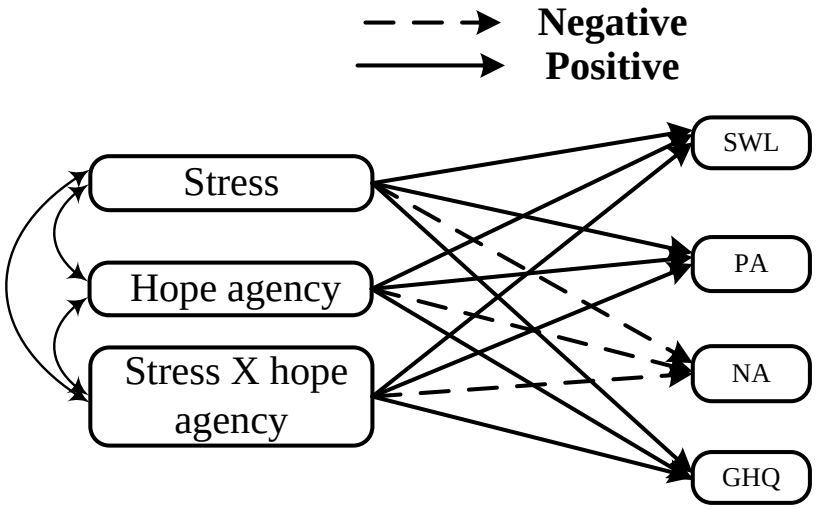
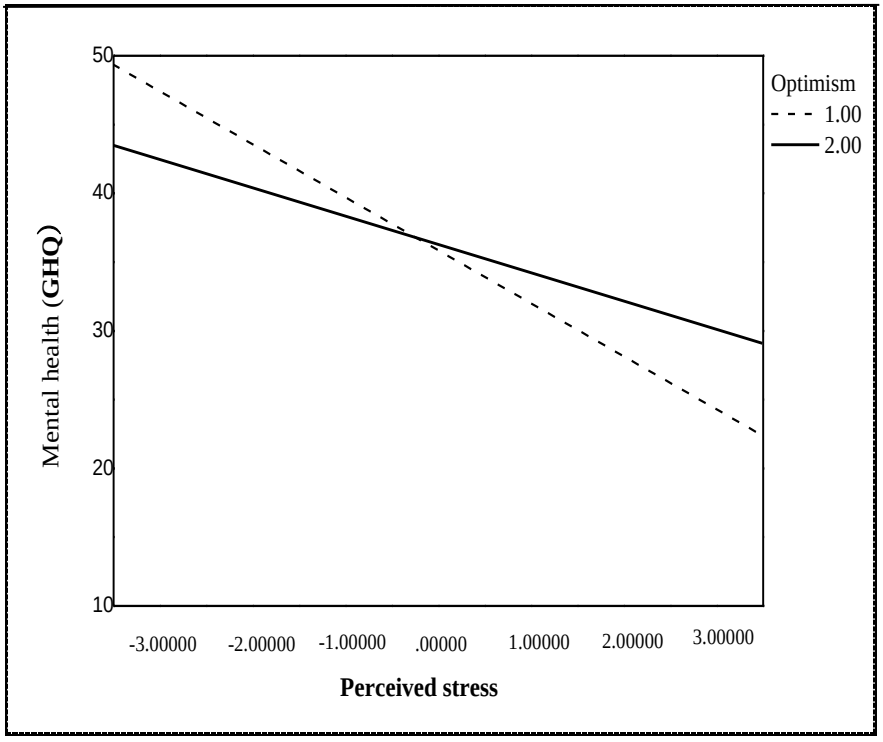


Figure 3. The hypothesised interaction between stress and character strengths and well-being (SWL, PA, NA), and mental health (GHQ).



1=Low R=.58

2=High R=.45

Figure 4. Plot of simple slopes for the relation between perceived stress and mental health (GHQ) at greater than and lower than median on optimism among academics.