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Relationships of personality, affect, emotional intelligence and coping with student stress and academic success: Different patterns of association for stress and success

Relationships of personality, affect, emotional intelligence and coping with student stress and academic success: Different patterns of association for stress and success.

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Abstract

The associations of personality, affect, trait emotional intelligence (EI) and coping style measured at the start of the academic year with later academic performance were examined in a group of undergraduate students at the University of Edinburgh. The associations of the dispositional and affect measures with concurrent stress and life satisfaction were also examined. The survey was completed by 238 students, of whom 163 gave permission for their end-of-year marks to be accessed. Complete data for modelling stress and academic success were available for 216 and 156 students respectively. The associations of academic success and stress differed, and high stress was not a risk factor for poor academic performance. Further analyses were based on the extraction of three composite factors (Emotional Regulation, Avoidance and Task Focus) from the EI and coping subscales. Structural equation modelling showed that academic performance was predicted by Conscientiousness, Agreeableness, positive affect and the Task Focus factor. Modelling for stress and life satisfaction showed relationships with personality, affect, and the Task Focus and Emotion Regulation factors. The Task Focus factor played a mediating role in both models, and the Emotion Regulation factor acted as a mediator in the model for stress and life satisfaction. The theoretical interpretation of these results, and their potential applications in interventions targeting at-risk students, are discussed.

1. Introduction

The emotions which students experience within the learning environment are known to be related to important outcomes such as academic success and academic adjustment, and also to student health and well-being. The specific topic of test anxiety and its effect on academic performance has been widely studied (e.g. Zeidner, 1995, 1996). Studies of other correlates of negative emotions have established associations with stress in students (Austin, Saklofske, & Mastoras, 2010) and with poorer academic adjustment (Halamandaris & Power, 1997). The role of positive emotions in educational contexts has been less widely researched but associations have been found with academic performance and academic engagement (Lewis, Huebner, Reschly, & Valois, 2009; Pekrun, Elliot, & Mayer, 2009; Reschly, Huebner, Appleton, & Antaramian, 2008). In the context of studying student emotions, it is also appropriate to examine the potential utility of emotional intelligence (EI) as an explanatory variable. Models of EI highlight a range of emotion-related capabilities; a component of EI which appears to be particularly likely to support students in the learning environment is emotion regulation, since individuals who can regulate their emotions well are better able to manage stress. Other emotional capabilities such as being able to perceive and understand emotions would be expected to support the process of building and maintaining students' social support.   In addition to being of theoretical interest, if EI is found to be related to academic success and/or academic adjustment, such findings would enable the development of intervention programmes designed to enhance EI capabilities in vulnerable students.

When considering in more detail how students' emotions are related to their academic success and well-being, it is important to take account of research showing that the propensity to experience both positive and negative emotions has been consistently linked to stable dispositional tendencies. Thus the study of student emotions and their outcomes requires the examination of a network of associations amongst state and trait variables. In the remainder of this section the associations amongst key variables, and results on how they are related to academic performance, student stress and other indices of student well-being and adjustment to the academic environment are examined.

1.1 Results on personality, emotions and coping in students

A central result in research on emotions is the emergence of two distinct dimensions, positive affect (PA) and negative affect (NA) from numerous factor-analytic studies. In addition to factorial independence, there is evidence that PA and NA are respectively linked to distinct biobehavioural approach and withdrawal systems (Harmon-Jones, Gable, & Peterson, 2010; Watson, Wiese, Vaidya, & Tellegen, 1999). PA and NA also differ in their correlation patterns with behavioural variables such as health complaints, stress, and social activities (Watson, 1988). In line with these established findings, the education-related findings on positive and negative emotions will be reviewed separately.

There is an extensive literature of negative emotions, and the underlying dispositions which promote them, in educational contexts. From the perspective of individual differences research it has proved theoretically informative to link negative emotions to pre-disposing dispositional traits, in particular to personality and coping

style. Because the personality trait of Neuroticism (N) is strongly associated with a propensity to experience negative emotions (e.g. Matthews, Deary, & Whiteman, 2009), it is of central importance in research on negative emotions. In addition, there are well-established strong associations amongst a broader set of variables: N, negative emotions, maladaptive[1] (especially emotion-focussed) coping, anxiety, and psychological distress (Matthews et al., 2009). These have been combined by some researchers into a temperamental factor of negative affectivity (Clark, 2005). The importance of personality and coping style in relation to stress in students has been examined in a number of studies (e.g. Austin et al., 2010; Watson, Deary, Thompson, & Li, 2008), with stress being found to be most strongly related to N and coping style, whilst the results of Conard and Matthews (2008) indicate that N is a stronger determinant of student stress than perceived workload.

Maintaining the focus on negative emotions, research on the emotional and dispositional determinants of student academic success has mainly focussed on anxiety or, more specifically, on test anxiety, with consistent negative associations with academic performance being found (Hembree, 1988; Seipp, 1991). Other studies of negative emotional/dispositional factors in students have found a wide range of associations relating to health, academic adjustment and well-being. Examples of these findings are associations of maladaptive coping with problem eating (Wichianson, Bughi, Unger, Spruitjt-Metz, & Nguyen-Rodriguez, 2009), N and

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[1] The terms adaptive and maladaptive coping are used in this review in the interests of clarity; this usage relates to a large literature showing that in many contexts coping strategies which can be broadly classified as task-focussed are adaptive, whereas those classified as emotion-focussed are maladaptive. Nonetheless, it should be noted that there is evidence that the optimum choice of coping style is situationally dependent, and the broad adaptive/maladaptive labels are not universally applicable (Zeidner & Saklofske, 1996).

negative affect (NA) with loneliness and poorer adjustment to university life (Halamandaris & Power, 1997), N with maladaptive perfectionism and self-reported daily hassles (Enns, Cox, Sareen, & Freeman, 2001; Vollrath, 2000), NA with lower levels of student engagement (Reschly et al., 2008), and N and maladaptive coping with homesickness (Van Tilburg, Vingerhoets & Van Heck, 1999).

By contrast, evidence has been found in a number of studies of students for positive and protective effects of personality traits (in particular Extraversion, E, and Conscientiousness, C), positive emotions and task-focussed coping. Extraversion is associated with experiencing positive emotions (Matthews et al., 2009) and, as with N and NA discussed above, the existence of a broad temperament dimension of positive affectivity underlying these associations has been proposed (Clark, 2005). Both E and C have been found to be positively correlated with task-focussed coping (e.g. Deary et.al, 1996) and, amongst personality traits, C is the strongest and most consistent predictor of academic success (Poropat, 2009). There are also associations between achievement motivation and C, with achievement motivation being found to mediate the relationship between C and academic performance (Richardson & Abraham, 2009). Austin et al. (2010) reported that C and task-focussed coping were associated with lower student stress levels, and Lewis et al., (2009) showed that positive emotions had incremental validity over negative emotions in predicting a range of positive outcomes such as adaptive coping and engagement in middle and high school students.

A specific mechanism (the broaden-and-build model) of the role of positive emotions in promoting adaptive outcomes has been proposed in which positive emotions promote increased behavioural flexibility, broadened attention and engagement with approach goals (Fredrickson, 2001; Lyubomirsky, King, & Diener, 2005). This mechanism includes a synergistic relationship between positive emotions and adaptive coping (Frederickson & Joiner, 2002). Pekrun et al. (2009) argue that the positive associations they report between the emotions of hope and pride and student academic performance could arise from such a process. Similarly, Reschly et al. (2008) suggest that their finding of partial mediation of the relationship between positive emotions and academic engagement supports the broaden-and-build theory.

1.2 Studies of emotional intelligence (EI) in educational contexts, and links between EI and coping

This section will focus on trait EI, which has been defined as "a constellation of emotional self-perceptions located at the lower levels of personality hierarchies" (Petrides, Pita, & Kokkinaki, 2007). EI has been found to be positively associated with psychological health (e.g. Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007), with indices of well-being such as life satisfaction, and with lower stress levels (e.g. Austin et. al., 2010). Emotion regulation is viewed as a key component of the processes underlying these associations (Austin et al., 2010; Mikolajczak, Nelis, Hansenne, & Quoidbach, 2008), with the capability to down-regulate negative emotions and up-regulate positive emotions providing an adaptive mechanism for students to handle the inevitable stressors of academic life. Other work on EI in

educational contexts focussing on academic adjustment and student drop-out has shown that EI promotes the successful transition from high school to university, with higher EI scores being found in academically successful compared to unsuccessful first-year students, and in students who remain at university compared those who drop out (Parker, Hogan, Eastabrook, Oke, & Wood, 2006; Parker, Summerfeldt, Hogan, & Majeski, 2004). Positive associations between EI and academic success in school pupils have also been found (Downey, Mountstephen, Lloyd, Hansen, & Stough, 2004; Hogan et al., 2010; Parker, Creque, et al., 2004; Petrides, Fredrickson, & Furnham, 2004).

EI is has also been found to be positively correlated with adaptive and negatively correlated with maladaptive coping (e.g. Austin et al., 2010; Petrides, Pita, & Kokkinaki, 2007; Saklofske, Austin, Galloway, & Davidson, 2007). Some recent work (Austin et al., 2010; Saklofske et al., 2007) has built on these empirical associations, and on the theoretical linkages which have been argued to underlie them (Matthews & Zeidner, 2000; Salovey, Bedell, Detweiler, & Mayer, 2000). It has been suggested that EI facilitates "successful and efficient self-regulation toward desired ends" (Salovey et al., 2000, p511), with high EI individuals having a superior ability to manage their emotions in stressful situations, avoid ruminating on negative events and set future goals effectively. Within this perspective, the EI component of emotion regulation is aligned with (non-use of) emotion-focussed coping, whilst emotional understanding and emotion regulation support the adoption of a task-focussed approach, for example by anticipating the emotions which will be experienced whilst working to achieve a desired goal.

Using this framework of EI as a component of coping, factor-analytically derived composites of EI and coping scales have been found to have explanatory power in the study of health-related behaviours (Saklofske et al., 2007) and stress (Austin et al., 2010). The models used in these studies built on the well-established transactional approach to coping processes, in which coping is conceptualised as "personality in action under stress" (Bolger, 1990), and thus would be expected to mediate the influence of personality on stress and related outcomes. Evidence for the mediating role of coping has been found in a large number of studies (e.g. Bolger, 1990; Bolger & Zuckerman, 1995; Carver et al., 1993; Deary et al., 1996). In studies of coping and EI, an example of this approach is the finding that a broad emotion regulation factor, with loadings from EI and coping scales, was found to mediate the associations between personality and both stress and well-being in Canadian university students (Austin et al., 2010).

1.3 The present study

This study explored the network of associations amongst personality, emotions, coping and EI and their relationship with students' academic performance and self-reported stress. Whilst some of the associations within this network (e.g. N, NA, coping, stress) are well-established, there is less information currently available about others. The associations of N/negative emotions have been much more widely studied both in general and educational contexts compared to effects specifically related to positive emotions. Findings to date, taken together with the broaden-and-

build model and other evidence linking PA to the approach system, suggest that this

topic is worthy of further study. It is also the case that there have been a relatively

small number of studies to date on EI in educational contexts, so further work in this

area is appropriate.

Hypotheses derived from the most consistent and least contextually-specific

associations amongst those discussed above were:

- Stress will be positively correlated with N, emotion-focussed coping and NA

  and negatively correlated with E, C, task-focussed coping, PA and EI.

- Academic success will be positively correlated with C.

In addition, in the light of previous findings, it was expected that

- The associations of personality and emotions and academic success and stress

  will be mediated by coping style or coping/EI composites.

2. Method

2.1 Participants

The survey was completed by 238 undergraduate students at the University of Edinburgh (53 male, 185 female) early in the autumn semester; the mean age of the sample was 20.03 years, standard deviation 4.69 years. A sub-group of 163 of these students gave permission for their course results to be retrieved at the end of the academic year.

2.2 Materials

2.2.1 EQ-i: Short (Bar-On, 2002). This 51-item scale provides a measure of total EI and five sub-components: Intrapersonal (associated with awareness of one's own feelings and positivity), Interpersonal (interpersonal/social skills), Adaptability (ability to cope flexibly with everyday problems), Stress Management and General Mood (happiness and optimism). Each item consists of a short statement, to which participants are asked to indicate how closely they identify using a five-point scale.

2.2.2 Personality Mini-Markers (Saucier, 1994). This 40-item scale of trait-descriptive adjectives provides a measure of personality based on five dimensions: Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N) and Intellect/Openness/Imagination (O). Participants are presented with a list of traits (e.g. bashful, moody, talkative) and asked to describe how accurately each trait describes them on a nine-point scale.

2.2.3 Coping Inventory for Stressful Situations - Revised (CISS-Adult; Endler & Parker, 1999). This 48-item scale provides a measure of three major coping styles: Task-Oriented, Emotion-Oriented, and Avoidance-Oriented Coping. Scores can also be obtained for two types of avoidance patterns: Distraction and Social Diversion.

For each item, participants are asked to indicate on a five-point scale how often they have engaged in that activity when they encounter difficult or stressful situations.

2.2.4 Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988.) This scale provides a measure of positive and negative affect. Participants are presented with a list of twenty affect-descriptive adjectives (10 positive, 10 negative), and, for each, asked to indicate to what extent they have felt that way within a specified period of time (one week in the present study) using a five-point scale.

2.2.5 Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelsetein, 1983). This 14-item scale provides a measure of the degree to which situations in one's life are appraised as stressful, and can be used as an outcome measure of experienced levels of stress. On each item, participants are asked to indicate how often they have felt that way using a five-point scale. The PSS was completed twice, using "in the last week" and "in the last year" as the specified time periods. This approach was adopted in order to obtain both a measure of general dispositional tendency to self-report as stressed (trait stress), and current stress level (state stress).

2.2.6 Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). This five-item scale provides a measure of global life satisfaction, and has been shown to have satisfactory psychometric properties. On each item, participants are asked to indicate their agreement using a seven-point scale.

2.3 Procedure

A request to participate in the survey, with a link to the survey website was disseminated via student mailing lists; participation in the survey was also offered under a course credit participation scheme for psychology undergraduates. The web

survey included the measures listed above, a set of demographic questions, and a section where students could opt-in to supply their student ID number and allow this to be used to retrieve course results at the end of the academic year. Students at Edinburgh take a variable number of individual courses over the academic year; following mark retrieval, an average mark for each student over all the courses he or she had taken during the year was calculated. In the following sections this will be referred to as "year mark". Each individual course mark was on a scale 0-100, and the calculated year mark is also on this scale.

3. Results

Table 1 shows descriptive statistics and scale reliabilities for the study measures.

Table 1 near here.

Examination of score differences in personality traits, EI sub-scales, coping sub-scales, affect, stress, and life satisfaction between males and females showed that, applying a Bonferroni correction for multiple comparisons, females scored significantly higher than males on distraction (t (226) = 3.03, d = .40, p = .003) and social diversion coping (t(226) = 3.82, d = .51, p <.001), and on A (t(221) = 4.05, d = .55, p <.001), whilst males scored higher on O (t(221) = 3.45, d = .46, p = .001). There was no sex difference in year mark. The age distribution of the sample was non-normal, with most students being under the age of 25 and a minority in the age range 26-59. The age up to 25 (N =224) and over-25s (N =14) were compared; there

were no significant differences between these groups on any of personality traits, EI sub-scales, coping sub-scales, affect, stress or life satisfaction. Differences between those students ($N = 138$) who had passed all their courses and those ($N=25$) who had failed at least one course were also examined. Apart from an unsurprising highly significant difference in year mark, the only significant difference between the groups was that the failure group scored significantly lower on task-focussed coping (t (154) $= 2.66$, $d = .43$, $p = .009$).

The possibility of score differences on the self-report measures for students who did and did not give consent for their exam marks to be accessed was examined. Correcting for multiple comparisons, there were no significant differences between these groups on the measures of personality, EI, coping, stress, affect or life satisfaction.

Table 2 shows the correlations amongst the study measures. It can be seen that the correlation patterns for year mark and stress differ, with stress having significant associations with a wide range of dispositional and emotional measures whilst the correlation pattern for year mark is sparse, with the significant correlations indicating that higher marks are associated with higher levels of EQ-i Adaptability, task-focussed coping and PA, and also with lower levels of A and emotion-focussed and distraction coping. Interestingly, the commonly found association of C with academic success (Poropat, 2009) was not found in the zero-order correlations for this sample, but the negative association with A reported for tertiary-level students in Poropat's meta-analysis was found. There was also no association between reported stress and

year mark, meaning that students experiencing high and low levels of stress did not

differ in academic performance.

Table 2 near here

Table 2 shows that, as found in previous studies of EI and coping (Austin et al.,

2010), there were a large number of significant correlations between the EQ-i

subscales and the coping scales.   In order to examine these associations further, the

approach of Austin et al. (2010) was followed in which higher-order composite

factors were extracted in order to obtain a more parsimonious set of variables

accounting for the correlations amongst the coping and EI components. The factor

analysis presented by Austin et al. (2010) using the EQ-i and the CISS produced three

factors which had a clear theoretical interpretation. These factors were labelled

Emotion Regulation (large negative loading from emotion-focussed coping, together

with positive loadings from EQ-i subscales such as Intrapersonal which are

conceptually related to the capability to regulate emotions), Avoidance (the two CISS

avoidance sub-scales loaded on this factor), and Task Focus (largest loadings from

EQ-i Adaptability and CISS task-focussed coping). Accordingly, three factors were

extracted from the present EQ-i/CISS data. The factors were extracted using the

principal components method; an oblique rotation was used since the factors were

expected to be correlated. The three factors accounted for 66% of the variance.

Because the factors were intended to be used in the modelling of life satisfaction,

which has some overlap in item content with the EQ-i General Mood subscale, the

latter was excluded from this analysis[2]. The factors are shown in Table 3, and their correlations with other variables are included in Table 2. It can be seen that the factors are very similar to those obtained by Austin et al. (2010) and we adopted the same factor names as in that study.

Table 3 near here

The next stage of the analysis was to construct models for year mark, stress and life satisfaction. As discussed in the introduction, the composite factors were expected to mediate the effects of personality and affect. For each model the variables to include were selected by examining the correlation matrix, together with the inclusion of theoretically meaningful variables derived from previous work.

For year mark, examination of its correlations showed that it was significantly correlated with PA, A, and the Task Focus factor. The Task Focus factor was significantly correlated with PA, A and C. This set of associations suggested that a model should be tested in which the Task Focus factor mediated the effects of PA, A, and C on academic performance. The inclusion of C reflects its theoretical and empirical importance in research on academic success. In the present data the correlation of C with year mark was marginally significant ($r = .14$, $p = .093$), indicating that its inclusion as a predictor in a multivariate model for year mark was justified. Because of the observed sex difference in A, sex was also included in the model.

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[2] We thank an anonymous reviewer for drawing our attention to this issue.

As there was no theoretical reason to expect full mediation by the Task Focus factor, models in which the effects of PA, C and A were partially mediated were examined. This showed that the direct paths from PA and C to year mark were not significant, so their effects were fully mediated by Task Focus. However, examination of the relationships for A showed that only the direct path was significant, i.e. the effect of A on year mark was not mediated by the Task Focus factor. The final model is shown in Figure 1, and fit statistics are shown in Table 4; these indicate good fit (Schweizer, 2010).

Figure 1 and Table 4 near here

For the stress model, the correlations of the three factors with stress, life satisfaction, personality and affect in Table 2 were examined. As the Avoidance factor was unrelated to stress, only the Emotion Regulation and Task Focus factors were retained in subsequent analyses. As the correlations for stress in the last year and stress in the last week with other variables were very similar, only stress in the last year was included in the model. Because the correlation patterns for stress and life satisfaction were similar (although with oppositely-signed associations), a model including both as outcomes was constructed. The strongest personality/affect correlates of stress and life satisfaction were PA, NA, N and E. A model was constructed with the antecedent variables being two correlated factors, one with loadings from NA and N and the other with loadings from PA and E, corresponding to the two broad temperamental factors of negative and positive affectivity discussed in the introduction. In a modelling context these factors provide a parsimonious and

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interpretable representation of the intercorrelations amongst personality and affect. C was also included as an antecedent variable since it was highly correlated with the Task Focus factor and also had the highest correlations after N and C with the outcome variables.

The initial model was similar to that of Austin et al. (2010) with the factor scores mediating the associations of negative affectivity, positive affectivity and C with stress and life satisfaction. As with the model for year mark, direct as well as mediating paths between the affectivity factors and the outcome variables were tested, and the direct path from positive affectivity to stress was found to be significant. The final model is shown in Figure 2, and fit statistics in Table 4. Figure 2 shows that the Emotion Regulation factor fully mediates the effects of negative affectivity on stress and positive affectivity on life satisfaction, and partially mediates the effect of positive affectivity on stress. The Task Focus factor mediates the effect of C and positive affectivity on life satisfaction. The fit indices, apart from RMSEA, are good or acceptable.

Figure 2 near here

4. Discussion

The specific hypotheses that stress would be positively correlated with N, emotion-focussed coping and NA and negatively correlated with E, C, task-focussed

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coping, PA and EI were confirmed. Surprisingly, the hypothesised association between C and academic success was not found in the zero-order correlation between these variables, but C did emerge as a predictor of academic success in the SEM model. The expected mediation effects were found, with the composite EI/coping factors mediating the associations of personality and affect with academic success, stress and life satisfaction. A more detailed discussion of the overall picture of the associations found for academic success and stress, and the interpretation of the models built on them is given in the paragraphs which follow.

From the correlational and SEM analyses, it can be seen that the determinants of academic performance and stress differed, with academic performance being predicted by a small number of scores: PA, A, C and the Task Focus factor, which comprises a blend of task-focussed coping and EQ-i Adaptability. By contrast, stress showed a much broader range of associations with affect, personality, coping and EI. In this sample high stress was not a risk factor for poor academic performance, although some studies have reported a negative association between stress and performance (e.g. Pritchard & Wilson, 2003; Struthers, Perry, & Menec, 2000).

Considering the findings for academic success in more detail, the results for personality were in agreement with previous work, in which C has been found to be the most consistent personality predictor of academic success (Poropat, 2009). Whilst the negative correlation of A with academic success found in the present study has been less frequently reported, this association was found for tertiary students in

Poropat's meta-analysis. Academic success has also previously been found to be related to task-focussed coping (Struthers et al., 2000; Zeidner, 1995).

For stress, the pattern of correlations was consistent with previous findings on the associations of personality, affect and coping style with stress vulnerability (Matthews et al., 2009), and also with recent work indicating negative associations between EI and stress (Austin et al., 2010). The SEM model for stress showed positive affectivity buffering against stress, and negative affectivity as a vulnerability factor for stress, with the Emotion Regulation composite factor mediating the relationship between the affectivity variables and stress. This mediational structure was similar to that found by Austin et al. (2010). The mediational structure for life satisfaction differed from that for stress, with Emotion Regulation and Task Focus mediating the effect of positive affectivity, and Task Focus also mediating the effect of C.

The role of EI (incorporated into composite factors) in the models for both academic success and stress supports the view that it can support positive coping (Salovey et al., 2000), and the structure of the model for stress highlights the centrality of emotion regulation in adaptive coping with the academic environment. The different pattern of associations and models for stress and academic success indicate that EI components related to the regulation of emotion and to adaptability are respectively salient to dealing with academic stress and to achieving academic success. The lack of significant correlations of any EQ-i component other than Adaptability with academic success contrasts with the significant associations of all EQ-i sub-scales with stress. Thus for academic success there is a specific association

for one EI facet but no evidence for a relationship with global EI, with the results highlighting the facet of EI which relates to planning and goal-setting (Bar-On, 1997). High EI has been found in previous work to be related to academic success specifically in the first year of university (Parker et al., 2004), but not in mixed groups of students from different years of study (Barchard, 2003). This moderation of the EI/academic success association by year of study can be interpreted as indicating that for the specific situation of students making the transition into university life (which makes particular demands in terms of dealing with a new socio-emotional environment) all facets of EI are salient in promoting academic success, but do not remain so once the initial adjustment period has been successfully negotiated.

Considering the specific role of emotions, the present findings can interpreted in terms of the linkage of positive and negative affect with approach and withdrawal respectively (Harmon-Jones et al., 2010; Watson et al., 1999), and with previous reports that NA is associated with perceived stress and psychological distress and PA with social activity (Watson, 1988; Watson & Pennebaker, 1989), and that PA is also related to success across multiple life domains (Lyubomirsky et al., 2005). The increased behavioural flexibility and broadened attention associated with positive emotions (Fredrickson, 2001) provides a possible explanation of the association of PA with academic success found in the present study, and other results on PA and life success (Lyubomirsky et al., 2005), are consistent with the association of PA with approach motivation, and also parallel previous findings on PA and academic engagement (Lewis et al., 2009; Reschly et al., 2008).

In addition to their theoretical interest, the results provide indications of interventions which would be helpful to students who are vulnerable to academic failure or stress, and could also be used to identify those students who are most likely to benefit from such interventions (e.g. the profile for risk of academic failure indicated from the present study is low task-focus, low Adaptability, low C, high A, low PA). Identifying the most at-risk students and providing appropriate support would provide a means to address issues of both student well-being and retention. In addition to stable personality traits, the models for academic success and stress each contain variables which are amenable to change. For academic success, in line with the approach which has been advocated in the context of health (e.g. Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001), interventions aimed at enhancing levels of positive emotions could allow students greater access to psychological resources which would enhance effective study. Alternatively, increased use of task-focussed coping skills could be directly targeted. The stress model also suggests that targeting either (positive and negative) emotions or the enhancement of coping strategies and EI capabilities could be helpful for students experiencing high stress levels. When considering the stress results, it should be kept in mind that a limitation of the present study was that only stress levels at the start of the academic year rather than stress experienced immediately prior to exams was measured, so the associations for specific exam-related stress need to be further examined in future work. The longitudinal associations of personality, EI and coping with later stress would be expected to be smaller in magnitude than the concurrent associations obtained in the present study. The study by Austin et al. (2010), which did include a measure of later

pre-exam stress, did however indicate a similar pattern of associations to those

reported here.

Acknowledgements

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Table 1. Descriptive statistics.

	Mean	Standard deviation	Internal reliability	*N*
E	44.34	11.23	.84	223
A	56.41	9.13	.84	223
C	46.66	11.18	.86	223
N	37.96	11.80	.82	223
O	53.57	8.54	.79	223
Inter	41.86	4.95	.82	238
Intra	34.10	6.61	.82	238
SM	29.00	5.28	.79	238
Adapt	24.16	4.16	.78	238
Gmood	35.93	6.87	.89	238
Task	51.54	9.02	.90	228
Emotion	47.00	11.12	.89	228
Distraction	21.98	5.91	.76	228
Socdiv	17.54	4.72	.85	228
PA	32.82	7.35	.86	227
NA	23.11	7.99	.86	227
SWLS	23.71	6.75	.87	216
Stress (week)	39.43	9.11	.87	216
Stress (year)	40.95	8.05	.87	218
Year mark	61.71	8.36		163

N range 216-238 except for year mark, N = 163. E = Extraversion, A= Agreeableness,

C = Conscientiousness, N = Neuroticism, O = Openness, Task = task-focussed

coping, Emotion = emotion-focussed coping, Distraction = distraction coping, Socdiv

= social diversion coping, SWLS = Satisfaction with Life Scale. Inter, Intra, SM,

Adapt, GM represent the Interpersonal, Intrapersonal, Adaptability, General Mood

sub-scales of the EQ-i.

Table 2. Correlations.

	YMark	SY	SW	LS	Fac1	Fac2	Fac3	PA	NA	Inter	Intra	SM
SY	-.10											
SW	-.05	.67*										
LS	.09	-.63*	-.55*									
Fac1	.06	-.66*	-.59*	.54*								
Fac2	-.15	-.02	.01	.11	-.13							
Fac3	.23*	-.41*	-.37*	.42*	.53*	-.12						
PA	.22*	-.45*	-.51*	.40*	.48*	.02	.44*					
NA	-.13	.54*	.63*	-.49*	-.64*	.11	-.30*	-.27*				
Inter	-.10	-.23*	-.25*	.33*	.52*	.19*	.30*	.33*	-.21*			
Intra	.06	-.46*	-.36*	.38*	.72*	-.03	.42*	.43*	-.32*	.39*		
SM	.05	-.41*	-.41*	.30*	.64*	-.12	.34*	.21*	-.52*	.22*	.15	
Adapt	.17	-.24*	-.23*	.23*	.37*	-.11	.79*	.25*	-.22*	.16	.29*	.31*
GM	.09	-.71*	-.61*	.71*	.76*	-.01	.55*	.56*	-.57*	.41*	.58*	.41*
Task	.22*	-.43*	-.38*	.44*	.53*	-.11	.96*	.46*	-.29*	.32*	.42*	.30*
Em	-.08	.65*	.56*	-.48*	-.87*	.25*	-.42*	-.38*	.64*	-.17	-.48*	-.49*
Distr	-.17	.10	.12	.03	-.24*	.88*	-.20*	-.11	.15	.02	-.13	-.19*
Socd	-.08	-.08	-.13	.17	.05	.81*	.01	.18*	.03	.34*	.10	.01
E	-.03	-.31*	-.32*	.32*	.47*	.14	.21*	.36*	-.22*	.42*	.59*	.07
A	-.18	-.14	-.21*	.22*	.35*	.22*	.16	.14	-.24*	.67*	.16	.38*
C	.14	-.21*	-.18*	.27*	.35*	-.13	.55*	.20*	-.23*	.23*	.14	.38*
N	.01	.55*	.49*	-.40*	-.65*	.15	-.35*	-.25*	.62*	-.19*	-.38*	-.53*
O	.10	-.09	-.06	.09	.19*	-.14	.32*	.22*	.02	.12	.29*	-.04

	Adapt	GM	Task	Em	Distr	Socd	E	A	C	N
GM	.34*									
Task	.58*	.56*								
Em	-.27*	-.67*	-.43*							
Distr	-.16	-.08	-.19*	.28*						
Socd	-.02	.10	.03	.12	.43*					
E	.06	.50*	.24*	-.29*	.05	.21*				
A	.11	.23*	.16	-.07	.07	.33*	.36*			
C	.47*	.28*	.51*	-.28*	-.19*	-.01	.06	.25*		
N	-.32*	-.56*	-.31*	.63*	.18*	.06	-.17	-.29*	-.22*	
O	.21*	.08	.32*	-.14	-.13	-.10	.12	-.03	.14	-.01

N range 152-163 for year mark, 216-218 in remainder of the table. YMark = year mark, SY = stress over past year, SW = stress over past week, LS = Satisfaction with Life Scale, Fac1 = factor 1 (Emotion Regulation), Fac2 = factor 2 (Avoidance), Fac3 = factor 3 (Task-Focus), PA = positive affect, NA = negative affect. Inter, Intra, SM, Adapt, GM represent the Interpersonal, Intrapersonal, Adaptability, General Mood sub-scales of the EQ-i. Task = task-focussed coping, Emotion = emotion-focussed coping, Distraction = distraction coping, Socdiv = social diversion coping. E = Extraversion, A= Agreeableness, C = Conscientiousness, N = Neuroticism, O = Openness.

Bold = p < .05; * = p < .01

Table 3. Factor analysis of the EQ-i and CISS scales.

	Factor 1 (Emotion Regulation)	Factor 2 (Avoidance)	Factor 3 (Task Focus)
CISS Emotion Focus	**-.76**	.30	-.03
EQ-I Intrapersonal	**.73**	.11	.06
EQ-I Interpersonal	**.63**	.49	.00
EQ-I Stress Management	**.54**	-.14	.16
CISS Social Diversion	.13	**.86**	.00
CISS Distraction	-.31	**.73**	.00
EQ-I Adaptability	-.12	.00	**.97**
CISS Task Focus	.22	.04	**.75**

Factors were extracted using the principal components method and with oblique rotation. Pattern matrix

elements are shown, with absolute values above 0.5 in bold.

Table 4. SEM fit indices

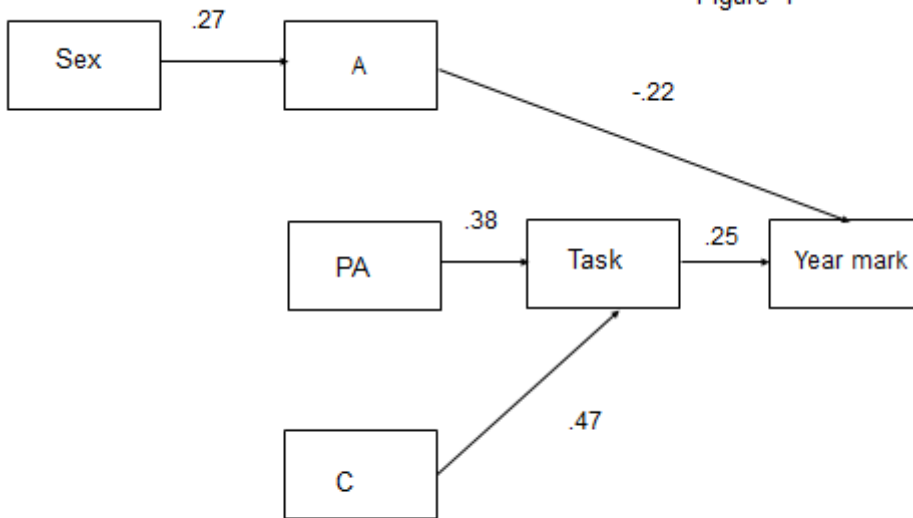|	χ2	NFI	NNFI	CFI	SRMR	RMSEA
Academic	9.05	.94	.97	.98	.045	.044
Success	*df* =7,					
Model	*p* =.25					
Stress	58.27	.93	.91	.95	.051	.098
Model	*df* =20					
	p < .001					

N = 156 for the academic success model, 216 for the stress model. NFI = normed fit index, NNFI = non-normed fit index, CFI = comparative fit index, SRMR = standardised root mean square residual, RMSEA = root mean square error of approximation.
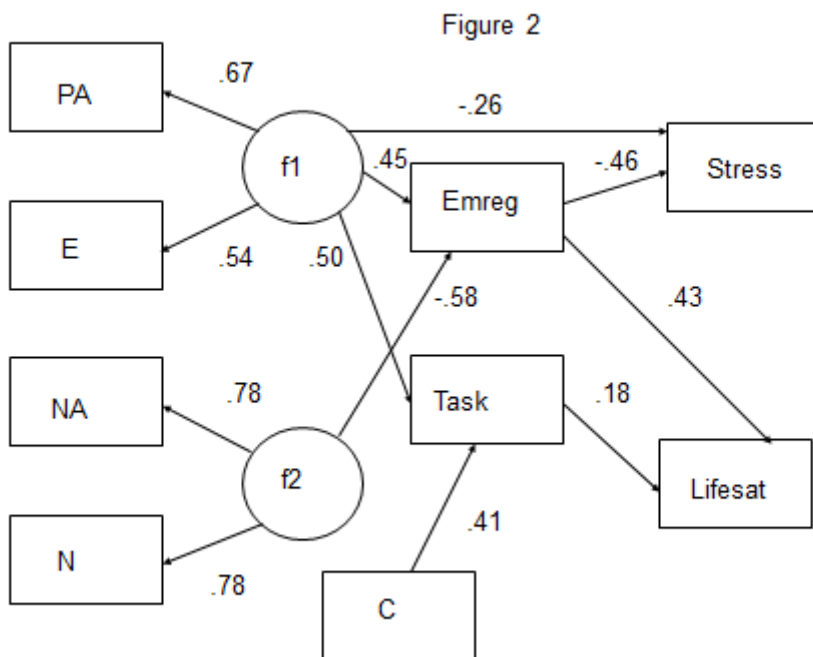
Figure captions

Figure 1. Model for year mark. Correlations included in the model and their fitted values were: C/PA .21,

A/PA .23, A/C .21. A = Agreeableness, PA = positive affect, C = Conscientiousness, Task = Task Focus factor.

Figure 2. Model for stress and life satisfaction. Correlations included in the model and their fitted values were:

positive affectivity/negative affectivity -.52, stress /life satisfaction -.44, C/positive affectivity .29, C/negative

affectivity -.35. PA = positive affect, E = Extraversion, NA = negative affect, N= Neuroticism, Task = Task

Focus factor, Emreg = Emotion Regulation factor.

Figure 1

Figure 2