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An Investigation into the Relationship Between Emotional Regulation, Coping Skills, and Undergraduate Student's Psychological Wellbeing

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ABSTRACT

The study aimed to investigate the relationship between the predictor variables of emotion regulation and coping skills on the criterion variable of psychological wellbeing (depression, anxiety, and stress).

Previous research has shown emotion regulation strategies have the ability to influence psychological wellbeing (Hu et al., 2014; Verzeletti et al., 2016). Moreover, past literature has portrayed coping skills relate both positively and negatively to psychological wellbeing (Lopez, 2014; Baumstarck et al., 2017)

The present study hypothesised that both cognitive reappraisal and coping skills would significantly predict psychological wellbeing amongst undergraduate university students.

Seventy-three undergraduate students were recruited through opportunity sampling. They were tasked with completing the Emotion Regulation Questionnaire (ERQ), the Brief-Cope and the Depression-Anxiety-Stress-Scales (DASS).

From the data, it was discovered that ERQ cognitive reappraisal significantly predicted DASS depression, DASS anxiety, and DASS stress. However, it was discovered that only avoidance coping skills were correlated with DASS depression, DASS anxiety, and DASS stress.

Based on these findings, recommendations were discussed for future interventions to be implemented throughout higher education institutes. Interventions incorporating teachings of healthy coping styles and how to regulate one's emotions would have the most beneficial influence on student's psychological wellbeing.

KEY WORDS:	EMOTION REGULATION	COPING SKILLS	PSYCHOLOGICAL WELLBEING	UNDERGRADUATE STUDENTS

Introduction

In recent years, there has been growing concerns surrounding the psychological wellbeing (PWB) of university students. Research has highlighted a staggering decline in students mental health with over 15,000 students reporting having experienced some form of mental health issue (Thorley, 2017). With the ever-growing pressures young adults face both socially and academically, more students are experiencing lower levels of happiness and life satisfaction. Further concern stems from the dramatic increase in the number of students who tragically died by suicide (Thorley, 2017) and reports of high levels of suicidal thoughts amongst university students (Li et al., 2019).

Historically speaking, the challenges students face during their time in education has changed radically over the years. Attending university was once only achievable for the academically elite who tended to have high levels of familial and financial support (Royal College of Psychiatrists, 2011). However, with government policies put in place to encourage a wider variety of students to enrol into higher education (Department for Education, 2017), strains within the education system have been witnessed. The government has gradually been reducing students funding with fees now costing £9,500 in England and Wales, which in turn has led to increased financial pressure and students seeking part-time employment (Dearden et al., 2007). Moreover, counselling services within universities are not being allocated the appropriate funding needed to match the high volume of students leading to longer wait times and risk of mental health problems manifesting due to lack of support.

Whilst progression has been made throughout universities surrounding conversations on mental health issues and reducing stigma, these statistics portray more research is needed to ensure students are being supported throughout the

entirety of university. Therefore, the following research will aim to gain further insight into the factors relating to student's PWB to ensure appropriate interventions and resources can be implemented across universities throughout the UK.

Psychological Wellbeing

To explore factors relating to student's mental health, it's important to first consider the true meaning of PWB and the impact poor psychological health can have on students. PWB can be defined as "an individual's experience of their life as well as a comparison of life circumstances with social norms and values" (World Health Organization, 2013:9). However, research has consistently shown optimal PWB is not always achievable for all students during their time at university.

Poor PWB constitutes of a number of emotions and behaviours regarded as negative, these could include: distress (Ridner, 2004), feelings of unhappiness (Sotgiu, 2016) and lack of motivation (Bhat and Naik, 2016) which can all have detrimental effects on performance at university. Research has shown poor PWB can lead an array of negative outcomes such as low attendance rates, inability to achieve academic potential (Andrews and Wilding, 2004), and risk of social isolation (Vasileiou et al., 2019). Moreover, university students are at a higher risk of developing symptoms of depression and anxiety than their age-matched peers (Winzer et al., 2018). This suggests that there are factors at university that are damaging to a person's mental health and well-being.

Research has investigated the factors affecting wellbeing amongst students. Burris et al. (2009) surveyed 353 university students to explore the relationship between factors linked to psychological health. It was discovered that negative health behaviours such as alcohol use and promiscuous activities, that are commonly

associated with university, were correlated to low levels of mental health. This provides evidence to portray how social facets of university can have harmful effects on well-being. However, the study is limited due to the lack of diversity in its sample as only Caucasian students participated, making it difficult to generalise the findings to a broader spectrum of the university population (Burris et al., 2009). Moreover, these findings only represent a proportion of students who partake in drinking and sexual activities thus, the results do not provide a clear picture on student's mental health in those who do not drink or remain abstinent throughout university.

Further insight comes from studies exploring the impact of academic stressors on university student's mental health. Shamsuddin (2013) discovered, using the Depression Anxiety Stress Scale-21 (DASS-21), that young adults in academia were more likely to experience symptoms of depression as a result of increased workload which in turn led to poor attendance. Moreover Shamsuddin (2013) found a significant negative relationship between anxiety and academic achievement. This coincides with the findings of Andrews and Wilding (2004) who carried out a study on 351 undergraduate students within the United Kingdom (UK) and revealed difficulties at university can lead to increased levels of depression and anxiety. These results imply that pressure to achieve academically can have a significant impact on increasing negative symptoms associated with well-being.

Emotion Regulation

Another area of interest when discussing poor PWB in university students is emotion regulation. Emotion regulation can be defined as the processes in which individuals influence the emotions their experiencing and how they express them (Gross, 1998b). Emotions play an integral role in the affective functioning of human beings as they have the power to influence a person's mood, motivation, and temperament.

Emotion regulation strategies have the ability to influence an individual's mental health both positively and negatively (Gresham and Gullone, 2012) making it an important process to understand in order to gain more awareness into the innerworkings of PWB amongst university students.

The mechanisms involved in emotion regulation are multifaceted and complex as they can develop from both conscious and unconscious strategies. Various theoretical frameworks have been put forward to explain emotion regulation, yet, one of the most substantial in the field of psychology is the Process Model of Emotion Regulation (Gross, 1998b). The model suggests, emotion regulation consists of five key features; situation selection, situation modification, attentional deployment, cognitive change, and response modulation (suppressing/expressing emotions).

Gross (2001) furthered his explanations of emotion regulation by defining two central strategies: cognitive reappraisal and expressive suppression. Cognitive reappraisal refers to an individual reframing an event to alter their emotional reaction to it (Troy et al., 2012) whilst, expressive suppression is described as an attempt to lessen ongoing emotion-expressive behaviour (Cutuli, 2014). From this, Gross and John (2003) developed the Emotion Regulation Questionnaire (ERQ) as a standardised means of measuring the two facets of emotion regulation.

The association between emotion regulation and PWB has been widely researched. Hu et al. (2014) conducted a meta-analysis on 48 studies, containing over 21,000 participants, to examine the relationship between emotion regulation and mental health. The results indicated cognitive reappraisal was negatively correlated with negative indicators of mental health. Troy et al. (2012) further supported this notion as they discovered cognitive reappraisal strategies effectively moderated symptoms of depression in adult women who had experienced a stressful life event. This

portrays cognitive reappraisal has the potential to be a useful mechanism in the prevention of negative symptoms associated with poor PWB. However, this research was only conducted on an adult sample size, meaning the results may be inapplicable to adolescents as the effectiveness of regulating emotions has been shown to develop with age (Nakagawa et al., 2017).

Verzeletti et al. (2016) inspected the impact of emotion regulation strategies on PWB in a sample of 633 Italian adolescents using the ERQ. It was discovered that greater reliance on expressive suppression was correlated with poorer PWB, whilst tendency to use cognitive reappraisal was linked with positive wellbeing. These findings represent the emotional regulation strategies significantly predict mental health in adolescents; mirroring the findings from adult population studies. Further evidence comes from Finkelstein-Fox et al. (2017) who highlighted emotion regulation strategies were strongly associated with PWB.

In spite of these substantial results supporting the concept of emotion regulation predicting symptoms of poor PWB, there is limited research on undergraduate students within the UK. Therefore, the present study will incorporate the ERQ as a means of measuring the association between emotion regulation and mental health in students from a UK-based university.

Coping Skills

Another factor that may influence the PWB of students is coping skills. Coping skills have long been researched in relation to their ability to improve PWB and aid the implementation of intervention plans for many mental health issues. Traditionally, coping skills have been referred to as a person's ability to develop behaviour patterns with the intention of reducing the impact of stressors (Krägeloh, 2011).

Coping skills incorporate elements of emotional, behavioural, cognitive, and physiological processes (Chýlová and Natovová, 2012) which have been shown to impact on PWB. In relation to university, students may take on constructive coping styles such as taking a positive outlook and having valuable interpersonal relationships for sources of support (Majumdar and Ray, 2010). However, maladaptive coping styles may also be incorporated such as avoidance (seeking satisfaction through substances) which can have a negative impact on PWB. Therefore, it is important to explore the different coping skills applied by students and the effects they can have on PWB.

One measure used to assess coping skills is the COPE inventory (Carver et al., 1989) which was derived from the theoretical frameworks of model of coping (Lazarus and Folkman, 1984) and the model of behavioural self-regulation (Carver and Scheier, 1981). However, participant dissatisfaction was witnessed upon using the self-report measure due to length and time constraints. To mediate this issue, Carver (1997) established the Brief-COPE as a means of reducing participant response burden and ensure participants fully commit to the study. The Brief COPE inventory is one of the most widely validated methods of measuring coping skills in modern psychology which incorporates measures of 14 both adaptive and dysfunctional coping responses (Carver, 1997). The Brief COPE has since been used in a multitude of variations.

García et al. (2018) created a Chilean adaption of the Brief-COPE and studied its effectiveness on a sample of 1847 Chileans. It was found that positive coping styles (emotional support and active coping) were correlated with PWB, whilst, negative coping (denial) led to increased levels of stress. These results highlight the importance of coping skills in mediating symptoms associated with poor PWB.

Moreover, Meyer (2001) discovered maladaptive coping strategies were correlated with symptoms of poor mental health. Additionally, Lopez (2014) investigated coping strategies and wellbeing among university students. The results highlighted a relationship between maladaptive coping styles and levels of stress. This signifies coping styles have the capability to both positively and negatively impact PWB amongst university students and thus, the present research will focus on coping styles as a variable relating to PWB in UK undergraduates.

Further variation of the Brief-COPE comes from Baumstarck et al. (2017) who created a 4-factor structure measure as opposed to the original 14-factors. The updated factors included: social support, problem solving, avoidance, and positive thinking. On a sample size of 398 individuals, it was discovered positive thinking and social support were significantly linked to PWB whereas, avoidance was associated with poor PWB. The updated measure was also shown to have high internal consistency, Cronbach's alpha, making it an acceptable adaption of Brief-COPE. The present study will therefore incorporate Baumstarck et al. (2017) adaption of Brief-COPE to assess coping skills connections with students PWB.

Rationale

As reported in previous literature, the role of emotion regulation and coping skills on PWB is extensive. However, research tends to focus on samples from students outside of the UK, making it difficult for the findings to be generalised and applied to intervention strategies across universities in the UK. Moreover, there is little research focus given to the variables of emotion regulation and coping skills simultaneously impacting PWB amongst students.

Therefore, the present study aims to expand on existing literature by studying the role of emotion regulation and coping skills on undergraduate university student's psychological wellbeing (meaning depression, anxiety, and stress amongst students). The following research questions will be explored:

Research Question 1: cognitive reappraisal will significantly predict depression

Research Question 2: cognitive reappraisal will significantly predict anxiety

Research Question 3: cognitive reappraisal will significantly predict DASS stress

Research Question 4: coping skills will significantly predict depression

Research Question 5: coping skills will significantly predict anxiety

Research Question 6: coping skills will significantly predict stress

Method

Design

The quantitative study used a correlational survey design. The study aimed to assess the effect of the following predictor variables: emotional regulation and coping skills, on the criterion variable of psychological well-being (depression, anxiety, and stress). All variables were measured using reputable self-report questionnaires for a standardised (Boynton and Greenhalgh, 2004) method of data collection.

Participants

Originally, the study aimed to obtain 110 participants following Green's (1991) conventions which suggested using the formula of $N \geq 104 + m$, with m being number of predictors, to meet the minimum required sample size. However, due to time constraints this was not possible. A total of seventy-three ($n = 73$)

undergraduate university students took part in the study, as the inclusion criteria indicated that only individuals studying at undergraduate level could participate. The sample contained 44 females (60.3%) and 29 males (39.7%) with ages ranging from 19-32 years old (M = 21.88, SD = 2.44). The current study employed opportunity and snowball sampling methods, recruiting participants via the MMU Research Participation Pool. The sampling methods chosen were reflective of many advantages; namely time and cost effectiveness (Brady, 2011).

Measures

The study made use of three well-established self-report scales, which in total contained 80 items. In addition, a set of generic demographic questions were presented to participants at the beginning of the survey. All measures and demographic questions were entered into the online programme Qualtrics © as a means of data collection.

Self-Report Questionnaires (Appendices 1-3)

The Emotion Regulation Questionnaire (ERQ) (Gross and John, 2003) measures participants propensity to regulate their emotion through the subscales of cognitive reappraisal and expressive suppression. The questionnaire contains 10 items such as "I control my emotions by *not expressing them*" and "I keep my emotions to myself", rated on a seven-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The ERQ contains no reverse-scored items. Higher scores on the ERQ indicate higher levels of emotional regulation. Internal consistency, Cronbach's alpha (α), for the subscale of cognitive reappraisal is .81 and .73 for expressive suppression (Enebrink et al., 2013) which demonstrates the ERQ is reliably

measuring two distinctive strategies of emotional regulation (Ali and Alea, 2018). Example of the ERQ can be found in appendix 1.

The Brief COPE (Carver,1997) is an abbreviated form of the COPE Inventory (Carver et al., 1989) and consists of 28 items assessing the ways respondents cope with stress in their everyday life for instance "I've been praying or meditating" and "I've been learning to live with it". The inventory typically contains 12 subscales, however, for the purpose of this research the 4 subscales used by Baumstarck et al., (2017) were implemented. These subscales include social support, problem solving, avoidance, and positive thinking. Baumstarck et al., (2017) stated the Brief COPE, using the 4 subscales, presented acceptable internal consistency, Cronbach's alpha (α), greater than .60 for each subscale. The Brief COPE contained no reverse-scored items. Higher scores on each of the subscales of the Brief COPE show increased utilisation of that particular coping strategy. Example of the Brief COPE can be found in appendix 2.

The Depression-Anxiety-Stress-Scales (DASS) (Lovibond and Lovibond, 1995) is a collection of three self-report scales measuring the related emotional states of depression, anxiety, and stress. The scale comprises of 42 items such as "I felt sad and depressed" and "I found it difficult to relax", rated on a four-point Likert scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much*). DASS provides separate scores for depression, anxiety, and stress. The higher the score in each subscale signifies greater levels of depression, anxiety, and stress with 42 being the highest score and 0 being the lowest. None of the items in the DASS are reverse-scored. Crawford and Henry (2003) reported high internal consistency, Cronbach's alpha (α), in a non-clinical sample for depression .93, anxiety .95, and stress .97

indicating the DASS is a reliable measure of psychological wellbeing. Example of the DASS can be found in appendix 3.

Procedure

The study was uploaded to the MMU Research Participation Pool, where students were able to read the study information page (Appendix 4) to decide whether they would like to take part. After the participants had signed up for the study, they were asked to click on a link that redirected them to Qualtrics ©. Before continuing, participants were required to read the participant information sheet which pertained details of the current study's aims (Appendix 5). After completion, they were then asked to confirm their consent to partake in the study (Appendix 6) whilst creating a unique identification code to ensure anonymity throughout. Following this, a basic set of demographic questions were asked concerning their age and gender (Appendix 7) after which, they were presented with a series of self-report measures. Upon completion, participants were provided with a debrief sheet which pertained details of the study's true aims and their right to withdraw from the study up until the stated date before analysis of the data commenced. In addition, participants were provided with the contact details of the lead researcher should they have any further questions regarding the study

Ethical Consideration

Prior to data collection, ethical approval was obtained (Appendix 8) from the research supervisor to ensure the study met the ethical standards of Manchester Metropolitan University and the British Psychological Society (BPS). Participants were provided with a full debrief at the end of the study, pertaining details regarding the assessment of the variables: depression, anxiety, and stress as these were

referred to as 'psychological wellbeing' in the participation information sheet. This action was taken to reduce the risk of social desirability bias. In addition, participants data was kept confidential throughout the entirety of the study and was stored in a password protected computer. Considerations were also taken to ensure the participants were protected from risk or harm (Appendix 9). However, as the study was measuring psychological wellbeing, details of various mental health charities were provided in the debrief for safeguarding.

Results

Raw data collected from the responses of the 73 participants was entered into IBM SPSS Statistics 25.0 for analysis. Scales and subscale totals were calculated. Cronbach's alpha coefficients were calculated to test the internal consistency reliability of all scales. These are displayed in Table 1.

Reliability Analysis (Appendix 10)

Table 1

The Internal Consistency of Reliability of all Measures

Measure	Number of items in variable	Cronbach's alpha	95% Confidence Interval for alpha	
			Lower	Upper
ERQ Cognitive Reappraisal	6	.76	.66	.84
ERQ Expressive Suppression	4	.72	.60	.81
COPE Social Support	8	.78**	.70	.85
COPE Problem Solving	4	.83	.75	.86
COPE Avoidance	10	.72	.61	.81
COPE Positive Thinking	6	.64	.49	.75
DASS Depression	14	.96***	.94	.97
DASS Anxiety	14	.93***	.90	.95
DASS Stress	14	.94***	.92	.96

Note. ERQ = Emotion Regulation Questionnaire, COPE = The Brief Cope, DASS = Depression-Anxiety Stress-Scales.

* *p* < .05, ** *p* < .01, *** *p* < .001

Table 1 shows that, Cronbach's alphas (*α*) for COPE social support, DASS stress, DASS anxiety, and DASS depression were significantly above the value of .7 which is conventionally considered acceptable for psychometric tests (Nunnally, 1978)

Descriptive Statistics (Appendix 11)

Descriptive statistics were calculated for all measures. (See Table 2)

Table 2

Descriptive Statistics of Means and Standard Deviations of all Measures (N=73)

Measures	Mean	Standard Deviation
ERQ Cognitive Reappraisal	29.21	5.73
ERQ Expressive Suppression	15.42	5.17
COPE Social Support	18.97	4.63
COPE Problem Solving	11.78	2.56
COPE Avoidance	24.52	4.97
COPE Positive Thinking	17.89	3.20
DASS Depression	28.01	11.38
DASS Anxiety	26.43	10.04
DASS Stress	32.22	10.70

Note. ERQ = Emotion Regulation Questionnaire, COPE = The Brief Cope, DASS = Depression-Anxiety Stress-Scales.

Correlation Analysis (Appendix 12)

A series of Pearson's bivariate correlations were conducted between all the variables in the study. (See Table 3)

Table 3

Pearson Correlation Matrix among all Study Measures (N = 73)

Measures	ERQ Cognitive Reappraisal	ERQ Expressive Suppression	DASS Depression	DASS Anxiety	DASS Stress	COPE Social Support	COPE Problem Solving	COPE Avoidance	COPE Positive Thinking
ERQ Cognitive Reappraisal	-	-.30**	-.33**	-.37***	-.30*	.16	.40***	-.13	.35**
ERQ Expressive Suppression		-	.17	.11	-.03	-.36**	-.39***	.24*	-.18
DASS Depression			-	.79***	.78***	-.01	-.33**	.58***	.09
DASS Anxiety				-	.83***	.14	-.17	.59***	.08
DASS Stress					-	.21	-.10	.50***	.06
COPE Social Support						-	.42***	-.01	.16
COPE Problem Solving							-	-.28*	.39***
COPE Avoidance								-	.22
COPE Positive Thinking									-

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

Table 3 highlights a large positive correlation between COPE avoidance and DASS depression. Furthermore, both COPE problem solving and ERQ cognitive reappraisal had moderate negative correlations with DASS depression.

Additionally, a moderate negative correlation between ERQ cognitive reappraisal and DASS anxiety was discovered and a large positive correlation between COPE avoidance and DASS anxiety.

Moreover, Table 3 signifies a large positive correlation between COPE avoidance and DASS stress, and a moderate negative correlation between ERQ cognitive reappraisal and DASS stress.

Multiple Linear Regression Analysis

Prior to performing both regression analyses, assumptions were verified to certify a multiple regression was an effective method of analysing the data. Regression assumptions of absence of outliers, multicollinearity, independent errors, homoscedasticity, and linearity of data were assessed. These can be seen in the individual regressions below.

Regression 1

Multiple regression analysis using the 'enter method' was conducted to test the extent that predictor variables of 'ERQ cognitive reappraisal, COPE problem solving, and COPE avoidance and criterion variable of DASS depression amongst undergraduate university students.

The examination of standardised residuals revealed that the data had no outliers for the dependent variable of DASS Depression (Std. Residual Min = -1.69, Std. Residual Max = 2.14). Collinearity tests signified that the data met the assumption of no multicollinearity for the criterion variable of DASS Depression (ERQ Cognitive

Reappraisal, Tolerance = .84, VIF = 1.19; COPE Problem Solving, Tolerance = .79, VIF = 1.26; COPE Avoidance, Tolerance = .92, VIF = 1.09). The data met the assumption of independent errors for the variable of DASS Depression (Durbin-Watson = 2.56). The scatterplot of standardised residuals showed that the data for DASS depression met the assumptions of linearity and homogeneity of variance.

As highlighted in Table 4, ERQ cognitive reappraisal, COPE problem solving, and COPE avoidance accounted for 41% of the variance in the criterion variable DASS depression, R^2 = .411 (R^2adj= .385) and the model was significant, $F(3,69)$ = 16.03, p < .001. Out of the variables, COPE avoidance was the strongest predictor of DASS depression scores, β = .52, $t(73)$ = 5.43, p < .001 whilst ERQ cognitive reappraisal also significantly predicted DASS depression scores, β = -.23, $t(73)$ = -2.26, p < .05. COPE problem solving, however, did not significantly predict DASS depression scores, β = -.10, $t(73)$ = -.94, p = .35.
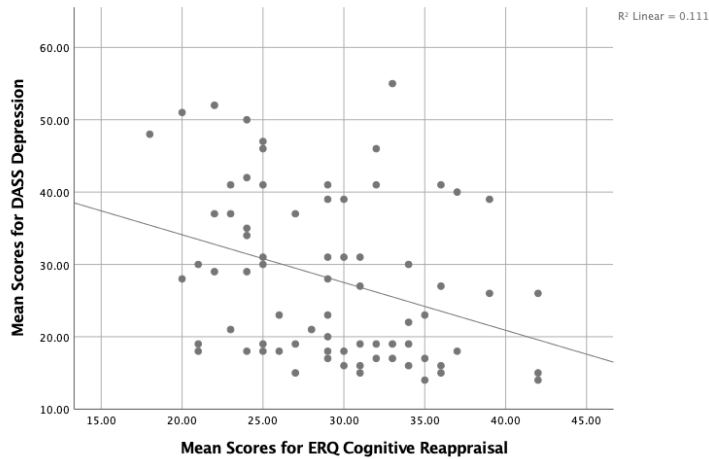
Table 4

Summary of Regression Analysis for Predicting DASS Depression Scores

| Variable	B	$SE\ B$ (std. Error)	β (beta score)
Constant	16.9	9.28	
ERQ Cognitive Reappraisal	-.45	.20	-.23*
COPE Problem Solving	-.43	.46	-.94
COPE Avoidance	1.20	.22	.52**
Note: R^2 = .41			

Note. * indicates p < .05; ** indicates p < .001

Figure 1. Scatterplot with regression line showing significant negative relationship between ERQ cognitive reappraisal and DASS depression.

As ERQ cognitive reappraisal scores increase by one standard deviation, DASS depression decreases by -.23 of a standard deviation.
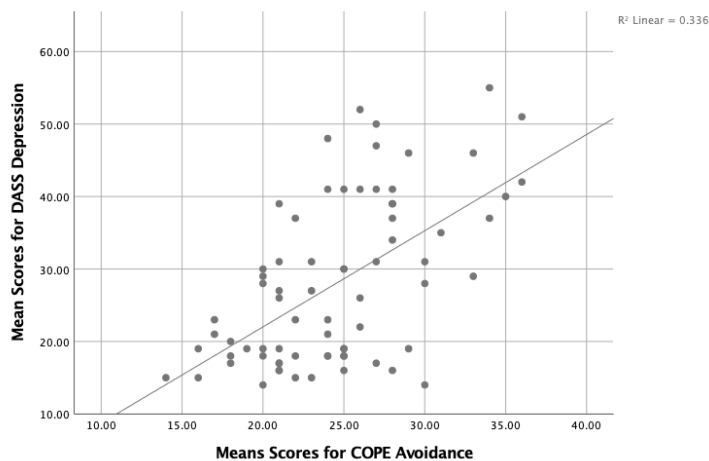
Figure 2. Scatterplot with regression line showing significant positive relationship between COPE avoidance and DASS depression.

As COPE avoidance scores increase by one standard deviation, DASS depression increases by .52 of a standard deviation.

Regression 2

A second multiple regression was conducted which analysed the extent to which the variables of 'ERQ cognitive reappraisal', and 'COPE avoidance' were predictive of DASS anxiety scores amongst university students using the 'enter method'.

The examination of standardised residuals revealed that the data had no outliers for the dependent variable of DASS Anxiety (Std. Residual Min = -2.00, Std. Residual Max = 2.20). Collinearity tests signified that the data met the assumption of no multicollinearity for the criterion variable of DASS Anxiety (ERS Cognitive Reappraisal, Tolerance = .98, VIF = 1.02; COPE Avoidance, Tolerance = .98, VIF = 1.02). The data met the assumption of independent errors for the variable of DASS Anxiety (Durbin-Watson = 2.35). The scatterplot of standardised residuals showed that the data for DASS depression met the assumptions of linearity and homogeneity of variance.

Table 5 illustrates ERQ cognitive reappraisal and COPE avoidance accounted for 44% of the variance in the criterion variable DASS anxiety, R^2 = .438 (R^2adj= .422) and the model was significant, $F(2,70)$ = 27.30, $p < .001$. Both ERQ cognitive reappraisal (β = -.30, $t(73)$ = -3.31, $p < .001$) and COPE avoidance (β = .55, $t(73)$ = 6.12, $p < .001$) significantly predicted DASS anxiety scores.
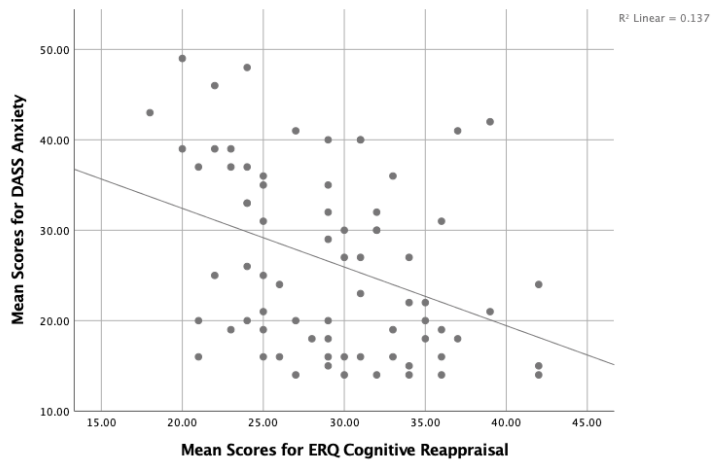
Table 5

Summary of Regression Analysis for Predicting DASS Anxiety Scores

| Variable	B	*SE B* (std. Error)	β (beta score)
Constant	14.35	6.90	
ERQ Cognitive Reappraisal	-.52	.16	-.30**
COPE Avoidance	1.12	.18	.55**
Note: R^2 = .44			

Note. * indicates p < .05; ** indicates p < .001

Figure 3. Scatterplot with regression line showing significant negative relationship between ERQ cognitive reappraisal and DASS anxiety.

As ERQ cognitive reappraisal scores increase by one standard deviation, DASS anxiety decreases by -.30 of a standard deviation.
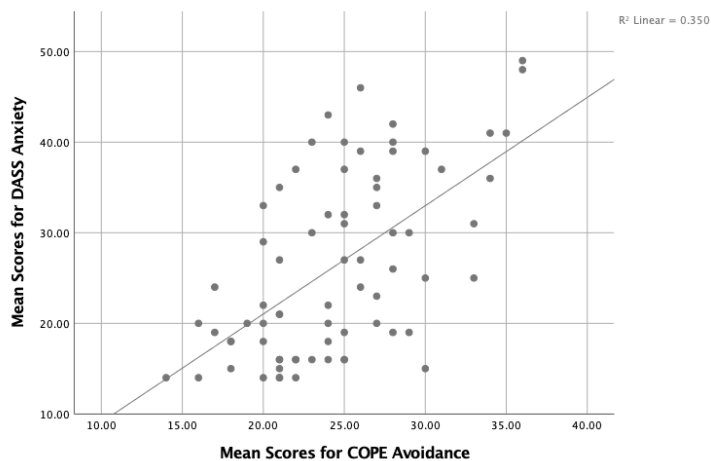
Figure 4. Scatterplot with regression line showing significant positive relationship between COPE avoidance and DASS anxiety.

As COPE avoidance scores increase by one standard deviation, DASS anxiety increases by .55 of a standard deviation.

Regression 3

Table 6 offers a summary of the third regression model, which verified the extent to which the variables of 'ERQ cognitive reappraisal' and 'COPE avoidance' were predictive of DASS stress scores amongst undergraduate university students using the 'enter method'.

The examination of standardised residuals revealed that the data had no outliers for the dependent variable of DASS Stress (Std. Residual Min = -1.91, Std. Residual Max = 2.26). Collinearity tests signified that the data met the assumption of no multicollinearity for the criterion variable of DASS Stress (ERS Cognitive Reappraisal, Tolerance = .98, VIF = 1.02; COPE Avoidance, Tolerance = .98, VIF = 1.02). The data met the assumption of independent errors for the variable of DASS Stress (Durbin-Watson = 2.54). The scatterplot of standardised residuals showed that the data for DASS depression met the assumptions of linearity and homogeneity of variance.

Table 6 demonstrates ERQ cognitive reappraisal and COPE avoidance accounted for 55% of the variance in the criterion variable DASS stress, R^2 = .302 (R^2adj= .282) and the model was significant, $F(2,70)$ = 15.12, $p < .001$. It was shown that both ERQ cognitive reappraisal (β = -.24, $t(73)$ = -2.35, $p < .001$) and COPE avoidance (β = .47, $t(73)$ = 4.63, $p < .001$) significantly predicted DASS stress scores.

Table 6
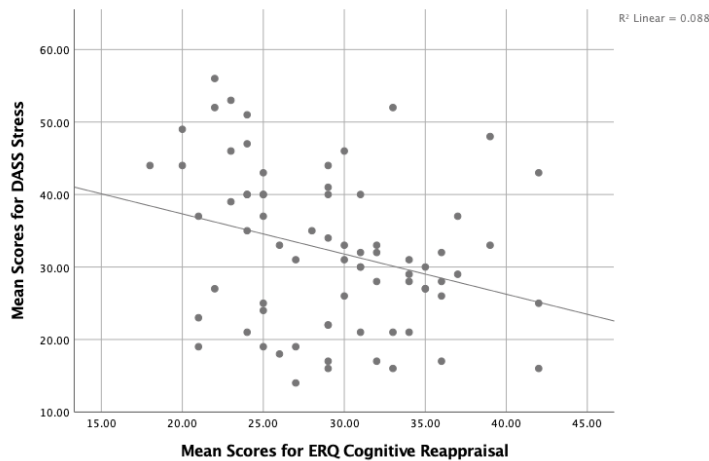
Summary of Regression Analysis for Predicting DASS Stress Scores

| Variable	B	*SE B* (std. Error)	β (beta score)
Constant	20.53	8.20	
ERQ Cognitive Reappraisal	-.44	.19	-.24**
COPE Avoidance	1.00	.22	.47**

Note: R^2 = .55

Note. * indicates p < .05; ** indicates p < .001

Figure 5. Scatterplot with regression line showing significant negative relationship between ERQ cognitive reappraisal and DASS stress.

As ERQ cognitive reappraisal scores increase by one standard deviation, DASS stress decreases by -.24 of a standard deviation.
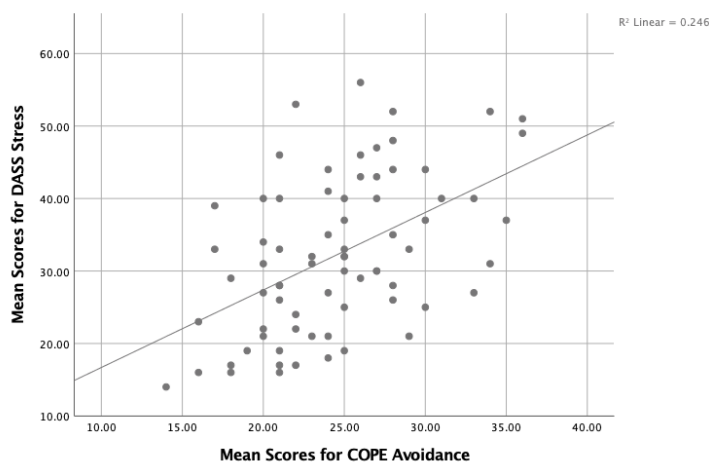
Figure 6. Scatterplot with regression line showing significant positive relationship between COPE avoidance and DASS anxiety.

As COPE avoidance scores increase by one standard deviation, DASS anxiety increases by .47 of a standard deviation.

Discussion

Summary of findings

The main aim of the present study was to investigate the relationship between emotion regulation, coping skills, and PWB (depression, anxiety, and stress) amongst undergraduate university students. The findings reported, a moderate negative correlation between ERQ cognitive reappraisal and the criterion variables of DASS depression, DASS anxiety, and DASS stress. Furthermore, the findings reported a large positive correlation between COPE avoidance and DASS depression, DASS anxiety, and DASS stress. Moreover, a moderate negative correlation was highlighted between COPE problem solving and DASS depression.

Emotion Regulation

Following multiple regression analysis, it was discovered that the emotion regulation facet of cognitive reappraisal was significantly and negatively correlated with the criterion variables of DASS depression, DASS anxiety, and DASS stress. These results therefore support research questions 1-3 which predicted cognitive reappraisal would significantly predict depression, stress, and anxiety. This is an interesting finding as it indicates as ERQ cognitive reappraisal increases, negative symptoms of PWB decrease; meaning the more an individual can cognitively reappraise their emotions, the more protected they are from developing symptoms of poor mental health. These findings are consistent with Hu et al. (2014) who found cognitive reappraisal to negatively correlate with poor mental health. Moreover, Troy et al. (2012) discovered cognitive reappraisal strategies can aid in the prevention of depressive symptoms manifesting in adult women. However, it is important to note, Troy et al. (2012) used the Beck Depression Inventory (BDI; Beck et al., 1961) to measure PWB. Therefore, it is interesting to mention that although the present study used an alternative measure of PWB, the results were still coherent with previous

literature which implies cognitive reappraisal can have a positive impact on reducing symptoms associated with poor PWB.

Furthermore, the present study found no relationship between the emotion regulation facet of ERQ expressive suppression and the criterion variables of DASS depression, DASS anxiety, and DASS stress. This therefore implies expressive suppression has no predictive value over PWB both positively and negatively. These findings differ to Verzeletti et al. (2016) who illustrated expressive suppression was linked to negative indicators of PWB. Additionally, Hu et al. (2014) concluded expressive suppression was negatively correlated with positive elements of mental health. The differences in findings may be a result of varying measures used to assess PWB. Future research may therefore benefit from a combination of measures to assess PWB to see if these account for the differences in expressive suppressions impact.

Coping Skills

The present study discovered various findings for the 4-factors of coping skills using the Brief-COPE. Firstly, it was discovered that neither COPE social support nor COPE positive thinking correlated with DASS depression, DASS anxiety, and DASS stress. These results are surprising as an array of research has indicated positive thinking and social support are positive coping strategies that can help alleviate symptoms of poor mental health. For example, García et al. (2018) found social support was categorised as a positive coping skill based on its ability to mediate symptoms of poor mental health. Moreover, Baumstarck et al. (2017) concluded social support and positive thinking were associated with positive PWB. Perhaps the differences in results can be equated to the samples used. The present study made use of undergraduate sample size who are notoriously known for experiencing

higher levels of symptoms of poor mental health in comparison to their age-matched peers. Future research may benefit from incorporating both student and non-student samples to compare the differences in coping skills.

Initially, a correlation was found between COPE problem solving and DASS depression. However, following multiple regression analysis it became clear COPE problem solving no longer significantly predicated DASS depression. This result is also surprising as research has concluded problem solving is a positive coping strategy to attain in order to lessen the symptoms of poor mental health (Baumstarck et al., 2017). It could be argued that the differences in results is due to undergraduate students within the UK being inadequately taught problem-solving skills. Future research may benefit from exploring individual's views on what problem-solving skills are and the extent to which these are taught to adolescents throughout their time in education.

Following a multiple regression analysis, an interesting finding was discovered. COPE avoidance was found to be significantly and positively correlated with the criterion variables of DASS depression, DASS anxiety, and DASS stress. This means as COPE avoidance strategies increase, so do negative symptoms of PWB (DASS depression, DASS anxiety, and DASS stress). These results correlate with Baumstarck et al. (2017) who highlighted avoidance coping strategies were associated with poor mental health. Furthermore, García et al. (2018) found negative coping strategies such as avoidance and denial were linked to increased levels of poor PWB. These findings are beneficial as they provide evidence to suggest the detrimental impact avoidance can have on students PWB. This information could be used as an area to target in future intervention plans carried out across universities

to assist in the reduction of students who report experiencing symptoms of poor mental health.

Limitations and Further Research

While the present study was found to report a multitude of significant results regarding emotion regulation, coping skills and their influence on PWB (depression, anxiety, and stress) amongst undergraduate students, there are some limitations that cannot be ignored.

The first limitation of the study is related to the sample used. The present study was only conducted on undergraduate students attending a university within the UK meaning the study may be suffering from ethnocentric bias. As emotion regulation and coping skills vary across different cultures, it would be unjust to assume the present study's findings are applicable to the global population. Future research could tackle this issue by carrying out a study investigating the relationship between emotional regulation and coping skills on PWB across various cultures.

Another limitation of the study is the measures used to assess emotion regulation, coping skills, and PWB. Self-report scales were implemented meaning the results may be hindered by participant bias; participants may have provided socially-desirable answers based on the sensitivity of some of the questions put forward. One way to eliminate this problem in future research would be to incorporate the Marlow-Crowne social desirability scale (MC-SDS; Crowne and Marlowe, 1960). The MC-SDS would measure and account for social desirability, ensuring the results are accurately showing the correlations between the variables.

One final limitation of the study is its inability to measure the different year groups of the university students who participated. This could be a problem as different year

groups could have varying experiences of effective coping skills and emotion regulation. Moreover, each year at university comes with new challenges and stressors for example, first year students and third year students will have differing perceptions on the difficulties of assignments and stress associated with university. Thus, future research could benefit from investigating the differences between emotion regulation, coping skills, and PWB in first year undergraduates and final year undergraduates.

Implications of the findings

As previously discussed, there has been growing concern surrounding the increase in students experiencing mental health problems whilst at university. Therefore, the present study has provided significant insight into some of the factors that predict poor mental health in undergraduate students; namely emotion regulation and coping skills. With cognitive reappraisal being the strongest predictor of mediating symptoms of poor mental health for emotion regulation, it is important for universities to take on board these findings. Higher education institutes would benefit from incorporating the teachings of how to appropriately regulate emotions, mainly cognitive reappraisal, to its students so they are better equipped when faced with the academic and social pressures that are encountered throughout university. Sessions could teach students areas such as understanding and labelling emotions, so they are better prepared when faced with them. Or perhaps mindfulness interventions could be an effective method to assist students in becoming more aware of the emotions they are experiencing.

Another significant finding of the present study was COPE avoidance was correlated with PWB (depression, anxiety, and stress). This portrays the more an individual attempts to avoid the stressor they are experiencing, whether that be through

substance use or denial, the more likely they are to develop symptoms of poor mental health. These findings could be passed on to higher education institutions and even health professional bodies to inform them of the various coping style behaviours that can lead to poor mental health. Universities could use this information to create intervention strategies that promote healthy coping skills and aim to deter students away from simply avoiding the problems they are facing.

Conclusion

To summarise, the overall findings of the present study provided evidence that illustrated the relationships between the predictor variables of emotion regulation and coping skills on the criterion variables of PWB (depression, anxiety, and stress). The study portrayed ERQ cognitive reappraisal and COPE avoidance were significantly correlated with DASS depression, DASS anxiety, and DASS depression which correlates with the findings of previous literature. Practical implications for this study were discussed to allow future researchers to explore the interconnections of the variables in more depth. Additionally, interventions which aimed to target emotion regulation and coping skills throughout universities in the UK were suggested.

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