A Quantitative Investigation into the Correlation between Levels of Depression, Anxiety, and Stress and Academic Performance in Australian Young Adults at University.

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Abstract

The World Health Organisation identifies that young adults are the most vulnerable age group affected by illbeing variables such as depression, anxiety, and stress (W.H.O., 2019). Illbeing variables can have detrimental effects on academic performance in a university environment, as students can be introduced to increased stressors or risk factors that can negatively impact illbeing (Andrews et. al., 2011). This study extends on previous research by showing how this relationship is impacted by different variables of personality, wellbeing, and intelligence. It is hypothesised that there will be a negative correlation between the variables of depression, anxiety, and stress (illbeing variables) and academic performance. Other hypotheses of this study will analyse how this correlation is affected by variables of personality, wellbeing measures, and intelligence. This study used a pre-gathered data set from the University of Adelaide, containing two-hundred-and-thirty-one young adult participants who completed various measures via SurveyMonkey in 2018 and 2019. To measure the main hypothesis of this study the *DASS-21* measure of depression, anxiety, and stress (Lovibond & Lovibond, 1995), and participants end of semester grade scores were used to measures academic performance. The data was analysed for normality, then applied into a Pearson's Correlation Coefficient matrix, and then into a multiple regression formula using SPSS programming. Results of this study showed a negative correlation between the Illbeing variables and academic performance, but results were not significant. Significant correlations were found within the variables of APM (intelligence), Conscientiousness, Perseverance, and academic performance.

Keywords: Illbeing, Academic Performance, Grade, Personality, Wellbeing, Intelligence.

Declaration

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Contribution Statement

In writing my thesis, my supervisor and I collaborated to develop multiple hypotheses of interest, and design and apply the appropriate methodology. I conducted the analysis using a pre-gathered data set provided by my supervisor, with ethics approval already given upon commencement of my supervisor gathering their data. Statistical analysis was conducted using the program Statistical Package Social Sciences, or SPSS. My supervisor and I collaborated on interpretation of the analysis in SPSS, with guidance provided when needed.

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1. Introduction

1.1 Overview of Mental Health in Young Adults.

Existing research into mental health has shown that from adolescence to adulthood, young adults are more susceptible to effects of illbeing than other adults. (W.H.O, 2019). According to the World Health Organisation mental health conditions can develop from 14 years of age and can become problematic throughout adulthood as many go undetected (W.H.O, 2019). Untreated mental health disorders such as anxiety, eating disorders, or childhood behavioural disorders may lead to increased feelings of loneliness, self-harm or depression which can eventuate into committing suicide (W.H.O, 2019). Statistics show that in 15-19-year old's suicide is the third leading cause of death (W.H.O, 2019). Research has also established that amongst adolescents' depression is one of the leading causes of illness and disability (W.H.O, 2019). These issues can have negative impacts on young adult's overall wellbeing and may impact other areas of their life such as their academic performance results at university.

1.2 Outline of factors that may affect Illbeing and Academic performance

Previous literature has shown that an increase in illbeing has a negative impact on academic performance in university students (Beiter et al., 2015). This relationship could occur because of increased workload, deadlines, lack of support in some areas, and the stress of navigating classes (Andrews et al. 2011). Other measures of mental health at university discussed that students could be at risk of burnout or increased measures of illbeing if their effort-reward ratio was imbalanced (Hodge et al., 2020). Hodge et al., (2020) discussed in their measure that students could be at increased risk of burnout or increased illbeing due to their overcommitment at university. While overcommitment has not been proven to be

negative, Hodge et al., (2020) found in their sample of Australian University students that the sample showed more measures of burnout when they were not largely rewarded for their overcommitment in subjects. Burnout and illbeing could therefore be a contributing factor to poor measures of academic performance.

1.3 Academic Performance

Academic Performance can be defined as the outcome of the performance of a person on an academic task. An academic task can relate to multiple measures including outcomes of exams, assignments, personality tests, or end of semester or term grades. University life, as described above, can produce many stressors that may influence a student's academic performance. The stressors that may influence academic performance can be described as variables of illbeing, which can be further defined as the variables of depression, anxiety, and stress.

1.4 Depression, Anxiety and Stress in young adults and its effect on Academic Performance.

Depression, anxiety, and stress are the most common mental health disorders contributing to illbeing in young adults (W.H.O., 2019). Previous literature has identified that the three illbeing variables can lead to limitations, academically, mentally, and socially. Students studying at university may have existing mental health conditions that can contribute to increased levels of depression, anxiety, and stress. In his study Beiter et al. (2015) analysed how depression can be negatively influenced by a university environment, while exploring other mediating factors impacting mental health.

Within his study Beiter et al. (2015) asked the college students in the sample to complete a survey consisting of questions of their lifestyle, and the level of concern they associated with challenges pertinent to everyday life (e.g family, sleep, and academic performance). They discussed that the three top concerns outlined in the survey were

academic performance, pressure to succeed, and post-graduation plans. From the results in their study Beiter et al. (2015) discussed that an increase in depression, anxiety and stress correlated negatively with academic performance, with other factors mediating this relationship including lack of sleep, financial difficulties, and body image. College Seniors who completed the DASS-21 in Beiter et al. (2015) study showed the highest levels of depression, anxiety and stress and showed increased results in correlation to results of the survey.

A study analysing the mental health of Australian university students found that measures of depression, anxiety and stress correlated negatively with academic performance (Andrews et al., 2011). The relationship between these variables concerns other mediating factors such as academic stress which relates to performance on examinations, and negatively affected the relationship in question. Students that experienced high levels of stress performed worse academically and had worse scores on measures of depression and anxiety. Additionally, measures of wellbeing were identified as being of major concern if they rated low as this revealed that some students were more at risk of performing worse academically. Andrews et al., (2011) study on university students found that students had higher levels of psychological distress at the start of the semester which increased academic stress and levels of depression, anxiety, and stress (Andrews et al., 2011).

Andrews et al. (2004) empirically analysed external factors within a university environment that may impact the mental health and academic performance of British University students. Within his analyses he found that prior to testing, there was an increase in consultation of student health services by emotionally disturbed students that described feelings of depression, anxiety, and stress (2004). Their research analysed to what extent student's levels of depression and anxiety increased after college entry, as they were concerned over how factors of financial difficulties, adverse life experiences, impact of

adversity, and other external factors affected the students psychologically and academically. Students within the sample completed multiple measures of depression, and completed ‘a modified list of Threatening Experiences’ (Brugha, Bebbington, Tennant, & Hurry, 1985) prior to entering university and during the middle of the year. This study was the first of its kind to indicate that British student’s level of anxiety and depression increased due to pressures of financial difficulties and other external factors.

Another study found that in relation to coping strategies a reduction in maladaptive coping strategies proved the most beneficial for reducing high levels of depression, anxiety, and stress in young adults (Mahmoud et al., 2012). The study also analysed other factors that were known to affect these variables including age, gender, social and academic status, and academic performance. Mahmoud et al. (2012) explained that college counsellors available to the sample found it difficult to provide coping strategies to reduce the impact of depression, anxiety, and stress on academic performance. Mahmoud et al. (2012) discussed in his study that due to the lack of effective coping strategies available to students their academic performance was negatively impacted by higher levels of depression, anxiety, and stress. Within the study an on-campus screening program was recommended to discuss strategies to reduce the effect of depression, anxiety, and stress on academic performance. The study recommended tailoring different coping strategies to both male and females as levels of depression, anxiety and stress varied significantly between the two genders. On average females reported higher levels of anxiety than males but did not vary significantly on measures of depression (Mahmoud et al., 2012) when analysing the reduction of maladaptive coping strategies.

1.5 Intelligence and Academic Performance

Throughout the literature general intelligence has been found to be a significant predictor of academic performance. General intelligence also correlates with outcomes of Grade Point Averages and exam results (Gignac, 2008). General intelligence or often referred to as the g-factor can be dissected as a bifactor model (Gignac, 2008) into 12 subtests, containing four other groups known as crystallised intelligence (*gc),* Short-term memory (*gsm)* and processing speed (*gs).* This measure of general intelligence has commonly been measured using Raven's Progressive Matrices, but as Gignac (2015) suggest it is not a reliable measure as he found that Raven's shared approximately 50% reliability with *g.*

Furnham's (2012) study assessed four measures of cognitive ability, including the Wonderlic Personnel Test (Mckelvie, 1989), the Baddeley Reasoning Test (Silver et al., 1989) and the Raven's Progressive Matrices (Bors and Stokes, 1998) results of first year undergraduate students. The study also assessed results from the NEO-PI-R (Costa and McCrae, 1987) measure of the Big Five Personality Traits. These results showed that Conscientiousness and General Intelligence were significant predictors of overall first year grade. Results also showed that general intelligence accounted for approximately 10% of the variance for college examination success.

Ridgell et al. (2004) found a significantly positive relationship between general intelligence, the Big Five Personality traits, and Academic Performance. Within their study academic performance was measured through Grade Point Averages and course grades, and the study also focused on 'Emotional Stability' within measures of the Big Five Personality traits. Their study highlighted that general intelligence significantly related to both course grade and GPA, whereas Emotional Stability only significantly correlated with course grades.

These results suggest that general intelligence is significantly correlated with academic performance but can be affected by other variables.

1.6 Wellbeing and Depression, Anxiety, and Stress

In Psychology wellbeing pertains to people who “have high levels of positive emotions” (Totzeck et al. 2020) or maintains them to a more positive than negative standard. In its broadest sense wellbeing encompasses a person’s mental, physical, and social domain. In comparison depression, anxiety, and stress can be classified as being on the negative end of positive wellbeing emotions. Amongst university students it is evident that the mental health disorders of depression, anxiety, and stress can have a negative impact on a university student’s academic performance (Totzeck et al. 2020). Maintenance and encouragement of positive affirmations increases the likelihood of students experiencing positive wellbeing emotions and in turn reduces feelings of depression, anxiety, and stress and improves their academic performance. It is therefore important to make coping strategies available and advertised by mental health agencies such as Headspace, Beyond Blue and Lifeline. Other important services include university counselling that can provide documentation to university lecturers and supervisors when necessary.

Totzeck et al (2020) study analysed the effect of wellbeing strategies including loving-kindness meditation in university students in Germany. Results of their study found that mindfulness-based strategies improved wellbeing and positive emotions, and decreased the negative emotions of depression, anxiety, and stress. This intervention-based practice proved effective in reducing symptoms of negative mental health, and improved overall mental health and wellbeing. This provides evidence for implementing more meditation-based practices in future mental health programs.

McDonnell et al (2020) identified in their study that depression was more prevalent in university students than across the general population. Within their study they asked participants to complete a questionnaire testing the trait of resilience, they found that participants with higher measures of resilience had lower depressive symptoms. Students had higher depressive symptoms when they had higher levels of Neuroticism, and coincidently had lower levels of resilience. These findings present evidence towards a personality focused study analysing their effects on illbeing variables. Through McDonnell's et al (2020) research it is evident that the personality trait of Neuroticism has a significant impact on a university students mental health.

Scheidt et al., (2018) developed a survey that was used to analyse factors of success in engineering students, which included personality, mindset, motivation, stress, grit, self-control, and mindfulness. Their measure for 'success' analysed why previous students who were successful academically in school did not perform to the same standard in university. Their study found that some aspects of student's applications to college did not get analysed such as the intelligence of the students. Within their study they developed another survey that analysed non-cognitive and affective factors that they believed represented 'success' in undergraduate students. They found that their test was valid in measuring the construct of success, and found that certain non-cognitive traits equated to success for students applying to Engineering rather than computing courses.

1.7 Wellbeing and Academic Performance

It is evident throughout the literature that the wellbeing of a student or non-student is negatively impacted by illbeing variables such as depression, anxiety, and stress. Other variables, such as personality variables of Neuroticism and Openness also significantly influence a person's overall wellbeing Cobo-Rendón et al (2020). Different tests of wellbeing

assess illbeing variables, while also assessing for positive aspects of wellbeing and self-esteem.

A common measure of Wellbeing is the EPOCH measure of Adolescent wellbeing that was developed by Kern et al, (2016). This measure is useful in testing a young adult sample as it addresses five common traits identified in adolescents known as Engagement, Perseverance, Optimism, Connectedness, and Happiness. In comparison to measures of illbeing, these wellbeing measures can be described as positive aspects of wellbeing. A study by Waters et al. (2019) described that increased measures of Engagement and Perseverance positively affected young adult's academic achievement grades during secondary school. Zeng et al., (2019) found that the EPOCH measure of wellbeing were accurate in measuring positive wellbeing when applied to a Chinese student sample, but when applied to their sample the wellbeing test did not consider change across time and the overall stability of the measure.

Cobo-Rendón et al (2020) study assessed the impact of student's mental health on wellbeing and academic performance and found that mental health had a negative effect on both variables. They also highlighted that these variables can also be affected by a student's adaptation to university life. Their study also suggested evidence for a positive relationship between wellbeing and academic performance as this supported a reduction in levels of stress and anxiety and increased self-esteem. During their second year, the 200 undergraduate university students that they sampled showed an increase in negative affect and a decrease in positive affect when assessing the relationship with academic performance. This relationship identified that levels of stress can increase when increased challenges of university life appear and overall, can negatively affect wellbeing and academic performance.

1.8 The Influence of Personality on Depression, Anxiety, and Stress.

The relationship between depression, anxiety and stress and its influence on academic performance is evident throughout the literature as being negatively correlated. Different personality types can have an influence on this relationship through their effect on the variables separately. The most common personality measure is the OCEANIC - Big Five Personality Traits (Schulze & Roberts, 2006), the five traits being Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Throughout the literature Conscientiousness has shown positive correlations with Academic Performance. Comparatively, Neuroticism has shown positive correlations with illbeing variables.

Conscientiousness is the personality trait identified throughout the literature as positively affecting students academically. Conscientiousness is associated with achievement and conformity and are people who are more likely to value order, self-discipline and strive towards increased competence (Roccas, Sagiv, Schwartz, & Knafo, 2002). Corker et al, (2012) found that previous literature supported that Conscientiousness predicts task performance (2012). Their study discussed that persistence of effortful strategies and achievement goals produced positive results, mediating the relationship between Conscientiousness and academic performance between the 347 college students that they tested. Another study by McCredie & Kurtz (2020) supported the influence of Conscientiousness on academic performance, their study analysing the personality ratings of undergraduate freshman, their parents and peers which showed that Conscientiousness was a significant predictor of GPA scores at the end of their course semester. Their study was supported as university students showed high measures of Conscientiousness that correlated positively with academic performance.

The measure of Neuroticism can identify instability or stability in a person's emotional state, it describes traits such as a person's emotional stability and general temper, and how confident a person feels within themselves and with others (Lebowitz, 2016a). It incorporates traits such as Awkwardness, Pessimism, lack of confidence, timidness, nervousness, and instability (Lebowitz, 2016a.). Lebowitz, (2016a) explains that high measures of Neuroticism can contribute to increased anxiety, sadness, worry, and low self-esteem which can negatively impact a person's emotional instability. Gunthert et al. (1999) explains that college students who completed a questionnaire measuring the influence of Neuroticism showed that "when reporting their most stressful event of each day (over 14 days), high Neuroticism, compared with low Neuroticism reported more interpersonal stressors." (1999). Gunthert et al. (1999) assumed that university students who scored high on measures of Neuroticism will measure lower on measures of academic performance, and additionally will have a negative relationship with DASS-21 measures.

1.9 Current Study

It is evident throughout the literature that there is a significant relationship between the variables of intelligence, the personality variables of Conscientiousness and Neuroticism, overall wellbeing, and depression, anxiety, and stress and academic performance. The literature shows a positive relationship between general intelligence and academic performance and discusses that it is a significant predictor of Grade Point Average and exam scores within undergraduate university students. When discussing the effect of personality variables, Neuroticism (or emotional stability) negatively affects academic performance, and can also impact on feelings of depression, anxiety, and stress. Comparatively, Conscientiousness is a significant positive predictor of academic performance, and is identified throughout the literature as positively correlating with low levels of depression,

anxiety, and stress. These measures of personality, wellbeing, and intelligence will be collectively referred to as ‘self-image’ within this study.

The illbeing variables of depression, anxiety, and stress have a negative relationship with academic performance when results are high, with the challenges of university environment having a negative impact. Numerous studies within the literature suggested that high levels of depression, anxiety, and stress, measured using the DASS-21 scale (Lovibond & Lovibond, 1995), may contribute to worse scores on academic performance within a young adult cohort. Wellbeing is important when considering its effect on mental health, as it can possibly improve academic performance.

The EPOCH measure of Adolescent Wellbeing (Kern et al., 2016) is a common measure, which discusses traits of Engagement, Perseverance, Optimism, Connectedness, and Happiness. Encouraging positive coping strategies such as meditation, contact of mental health services such as Headspace, Beyond Blue, and Lifeline are important in improving mental health and wellbeing. Depression, anxiety, and stress have been recognised by the World Health Organisation (2019) as the most common mental health disorders affecting Young Adults around the world. My study aims to address these issues and assess their influence on results on academic performance with consideration of the sub effects of intelligence, wellbeing, and personality. Results from my study may then be used by mental health agencies to identify which Illbeing variable need more focus to provide students with better mental health and academic performance outcomes. I present a series of hypotheses below.

1.10 Research Aims and Objectives

The hypotheses of this study are as follows:

1 I hypothesise that measures of illbeing will correlate negatively with academic performance.

2 I hypothesise that measures of Optimism and Happiness will correlate negatively with measures of illbeing.

3 I hypothesise that wellbeing measures of Perseverance and Engagement will correlate positively with academic performance.

4 I hypothesise that wellbeing measures of Perseverance and Engagement will correlate positively with measures of Conscientiousness.

5 I hypothesise that Neuroticism will positively correlate with measures of illbeing.

6 I hypothesise that measures of Intelligence will correlate positively with measures of academic performance.

2. Method

2.1 Participants

The following study contains a pre-gathered data set, collected by my supervisor, from the University of Adelaide. Data was gathered from the 2018 and 2019 Psychology 1A (semester one) and Psychology 1B (semester 2) cohorts. Results from the data showed that the sample contained two-hundred-and-fifty-three participants, and two-hundred-and-thirty-one of them classified as young adults. The 'young adult' category was determined with reference to Beiter's et al. (2015) study that analysed similar variables in American college students who were categorised as young adults if they were 18-25. Of the included two-hundred-and-thirty-one participants each completed multiple measures relating to personality, mental health, intelligence, wellbeing, and academic performance. A breakdown of the demographics of participants is shown in table 1 below.

Table 1. Sample Demographics of the Two-hundred-and-thirty-one Young Adults

Total Participants	Male	Female	Other	Mean age in Years
231	93	135	3	19.05

2.2 Measures

2.2.1 Depression, Anxiety, and Stress Scale – DASS-21 (Lovibond & Lovibond, 1995)

The DASS-21 is a mental health measure that measures three negative emotions of mental health: Depression, Anxiety, and Stress (Lovibond & Lovibond, 1995). It is a 21 item self-report measure used to analyse the severity of the emotions of depression, anxiety, stress. It uses phrases such as "*I found myself getting upset by quite trivial things",* and "*I found it difficult to relax"* on a measures of 0-3 categorised qualitatively as *"did not apply to me at all", "applied to me to some degree, or some of the time", "applied to me a considerable degree, or a good part of the time", "applied to me very much, or most of the time*". As part of clinical investigation of the patient the DASS-21 is used to 'clarify the locus of emotional disturbance' (Lovibond & Lovibond, 1995). The test has yielded high internal consistency and has provided meaningful discriminations of degree between the three emotions throughout a variety of settings. It is not a measure capable of categorising patients into emotions of depression, anxiety, or stress (according to the DSM) but it is useful in distinguishing the degree of the symptoms. The test also analyses changes in current state and emotional states over time.

2.2.2 Academic Performance results

Within this study academic performance is conceptualised through using the Psychology semester one and semester two cohort academic achievement grades from 2018 and 2019. The academic achievement grades contain data of each students end of semester grade.

2.2.3 The OCEANIC - Big Five Personality Traits (Schulze & Roberts, 2006)

The OCEANIC - Big Five Personality Traits (Schulze & Roberts, 2006) is a personality measure identifying five primary factors of personality: Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism. Index condensed refers to how these variables are condensed to assess a specific data set, or topic. The original test of personality was developed by McCrae and Costa (1987), and analysed the five personality traits through a self-report questionnaire Likert-scale design (e.g. 1- Strongly Disagree to 2- Strongly Agree). The OCEANIC measure was developed to test its validity in a university environment, and is useful for testing for the effect on grade.

2.2.4 EPOCH measure of adolescent wellbeing (Kern et al, 2016)

The EPOCH measure of Adolescent wellbeing was developed by Kern et al, (2016). As evident in the title it is an adolescent measure testing the prevalence of five characteristics that might foster wellbeing, physical health, and other positive outcomes. These five characteristics are Engagement, Perseverance, Optimism, Connectedness, and Happiness and can be identified as positive psychological characteristics. The test was developed through compiling a pool of 60 items, from a series of 10 studies containing 4,480 adolescents (age 10-18) in total from Australia and America. By using a variety of students from different countries it enabled researchers to maintain internal and test-retest reliability, and discriminant, predictive, and convergent validity. To further validate the measure the items were narrowed down to 20 psychometric properties, and then for the purpose of empirical testing and better application of a wellbeing theory it was narrowed down to five characteristics.

2.2.5 Ravens Advanced Progressive Matrices – short form (Bors and Stokes, 1998)

In this study intelligence was measured using Ravens Advanced Progressive Matrices – short form (Bors and Stokes, 1998). All students within the Psychology 1A and 1B cohort completed this measure, with intelligence conceptualised through IQ. Raven's Progressive Matrices is a multiple-choice intelligence test of abstract reasoning and was developed by Bors and Stokes (1998). In the test participants are presented with a series of patterns, usually presented in form of '4x4', '3x3' , or '2x2' matrix, and they are asked to identify the missing item in the series. Each task becomes increasingly more difficult as the participant progresses. Many versions of Raven's Progressive Matrices have been developed, including tests more suitable for the elderly, children, or those with a learning disability and tests that are more advanced in difficulty. This presents Ravens' Advanced Progressive Matrices which contains a set of 48 items presented as set 1 (12 items) and set 2 (36 items), presented in black ink on a white background. This test is suitable for adolescents and adults with above-average intelligence.

2.3 Procedure

Participants for this study were selected from the Psychology semester one classes in 2018 and 2019, and semester two classes in 2019 at the University of Adelaide. Students were asked to complete various tests of intelligence, depression, anxiety and stress, measures of Personality, and the EPOCH measure of wellbeing via SurveyMonkey at the three separate time points. Data was collected through this platform, with students given a brief description of the study prior to commencing and asked for consent of their data to be used for research purposes. Students were instructed to complete the tasks in one sitting and by themselves, in a distraction-free environment with no time constraints placed on them.

2.4 Statistical Analyses

The Statistical Package for the Social Sciences (SPSS, Version 24.0) was used to analyse the data, the data from the measures outlined above first being screened to determine its suitability for parametric analyses. The measures will be collated into a Pearson's Correlation Coefficient matrix to show the correlation between the variables, and to summarise if any significant patterns occur in the data. The data will also be tested for normality using the Shapiro-Wilk Test of normality. Significant results indicated in the correlation matrix will then be analysed using multiple regression to test how they support the hypotheses presented above.

3. Results

3.1 Sample Demographics

The final sample size for this study was 231 young adults, who were completing their undergraduate studies at the University of Adelaide. The mean age of the sample was 19.05, with a standard deviation of 1.33. The gender breakdown of the sample was 40% male ,58% female, and 1% Other.

3.1.1 Assessing Assumptions of Normality

Table 2. Measures of Central Tendency and Normal Distributions

	Mean	Median	SD	Skew	Shapiro-Wilk Test
Depression	6.08	5.00	5.351	.918	.000
Anxiety	5.82	5.00	4.838	.729	.000
Stress	7.84	7.00	4.788	.459	.000
Grade	77.61	80.00	13.158	-1.53	.000
APM	7.23	8.00	2.894	-.241	.000
Engagement	12.29	12.00	3.105	.133	.005
Perseverance	13.60	14.00	2.991	-.156	.008
Optimism	13.35	14.00	3.224	-.661	.000
Connectedness	16.11	17.00	3.377	-.983	.000
Happiness	13.91	114.00	3.538	-.181	.000
Conscientiousness	36.25	36.00	7.073	.212	.035
Neuroticism	30.48	29.00	7.680	.434	.001

Among the sample of young adults (*N*= 231), Table 2 shows that participants indicated negative skewness on six out the of the twelve variables within the data set, meaning that they had lower scores on these measures in relation to the mean. A Shapiro-Wilk test of normality supported the variance within the variables indicating that they significantly deviated from normality. Participants within the sample indicated high mean values for measures of depression, anxiety, and stress on the DASS-21 (Lovibond & Lovibond, 1995) scales, with stress indicating the highest mean value with depression following second. The standard deviation of each measure showing that they had similar levels of variability. Grade indicated a high mean value, that could be categorised into the Distinction category of Australian University Grading Systems (Beiter et al. 2015). Although data did indicate a large standard deviation meaning that participants largely varied between grades. Skewness of the variables of illbeing were positive, with skewness of grade being negative. Overall skewness of these variables indicates that illbeing decreases positively and grade decreased negatively, in relation to the mean. From this table it is evident that on average participants have higher measures of illbeing, and high grade scores.

Other variables of APM, Wellbeing, and Personality indicated moderate to high ratings, with varying skewness between the variables. Participants mean score for APM was Above-average, according to interpretations of Ravens Advanced Progressive Matrices (Deshon et al. 1995). The standard deviation for APM was small, meaning that there was little variability between participants measures. Participants measures on the EPOCH measures of adolescent wellbeing (Kern et al., 2016), indicated that of the five variables Perseverance and Happiness had two of the highest mean values. The standard deviation between the five measures showing that they had similar levels of variability on levels of wellbeing. Measures of personality using the OCEANIC - Big Five Personality traits (Schulze & Roberts, 2006), indicated that Conscientiousness had a higher mean value in

comparison to Neuroticism, standard deviation measures indicating similar variability between the variables. Overall skewness of these variables indicated a negative skewness for APM, negative skewness for wellbeing (except for Engagement), and positive skewness for measures of personality. These measures indicate that on average participants APM was Above-average, with measures of wellbeing relatively high, in addition to measures of personality.

3.2 Pearson's Correlation Coefficients

Table 3. Pearson's Correlation Coefficients (N = 231)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Grade	-	.207**	.171**	-.115	-.061	.178**	-.042	.041	.010	-.124	-.037	-.074
2. APM		-	-.056	-.141*	.038	-.094	-.055	-.017	-.028	-.046	-.073	-.045
3. Conscientiousness			-	.076	.161*	.563**	.235**	.152*	.175**	-.149*	.006	.003
4. Neuroticism				-	.111	-.064	-.247**	-.221**	-.410**	.556**	.602**	.670**
5. Engagement					-	.299**	.383**	.184**	.331**	.006	.124	.092
6. Perseverance						-	.436**	.415**	.407**	-.247**	-.027	-.056
7. Optimism							-	.588**	.684**	-.412**	-.182**	-.269**
8. Connectedness								-	.640**	-.407**	-.240**	-.276**
9. Happiness									-	-.602**	-.351**	-.428**
10. Depression										-	.674**	.755**
11. Anxiety											-	.774**
12. Stress												-

Note: ** $p < 0.01$, * $p < 0.05$

Significant correlations were indicated in Table 3 for Hypotheses Two, Four, Five, and Six, however, proposed directionality for the hypotheses was correctly assumed except for Hypothesis Three. Illbeing measures did decrease academic performance, but as there was not a significant correlation Hypothesis One was not supported. Optimism and Happiness did significantly decrease measures of illbeing, with correlation ranging from r = -.18 up to r = -.60, providing support for Hypothesis Two. It is interesting to note that correlations were stronger for Happiness than for Optimism, with the strongest correlation evident between these variables and Depression, with a score of r =-.60.

Perseverance and Engagement indicated varying directionality between the variables and academic performance, as Engagement correlated negatively instead of positively. As this hypothesis neither followed proposed directionality or significance, Hypothesis Three was not supported. Perseverance and Engagement significantly positively correlated with Conscientiousness, with correlations ranging from r = .16 r = .56. As measures were both positively correlated and significant, Hypothesis Four was supported. This significance was unexpected due to Engagement's insignificance with grade. Neuroticism significantly positively correlated with measures of illbeing with scores ranging from r = .55, r = .60, and r = .67, so Hypothesis Five was supported . It is interesting to note that overall correlations were stronger between Neuroticism and stress, compared to the other two illbeing variables with depression correlating the least. APM (Intelligence) correlated positively with measures of academic performance, with measures of r =.207, so Hypothesis Six was supported.

From this analysis it is evident that illbeing does not significantly correlate with academic performance. The largest significant correlations did occur however between APM, Conscientiousness, Perseverance, and Academic Performance. A multiple regression analysis will be conducted to see how well these variables predict academic performance.

3.3 Regression Analysis

Table 4. Regression Model Comparisons for Grade

	Grade **Model 1** F[227,230]=7.436 R^2= .089		
	Beta	**t**	**sig**
APM	1.026	3.548	.000
Conscientiousness	.195	1.372	.171
Perseverance	.615	1.820	.070

A multiple regression model is shown in Table 4 and estimated the proportion of the variance in Grade that was examined through the variables of APM (Intelligence), Conscientiousness, and Perseverance. A summary of the output is presented in Table 4 and indicates that the *F*-test (based on the three variables) did make a statistically significant prediction of Grade, with the proportion of variance small. The beta values indicate that for each one value increase for Grade, APM increases the most out the three variables. It is also the only statistically significant variable, with the highest standard error in relation to the sample. This means that APM is the greatest predictor of grade in comparison to the other variables.

4. Discussion

4.1 Overview

This study explored the effect of depression, anxiety, and stress on academic performance, while controlling for affecting variables of wellbeing, Intelligence, and personality, notably Conscientiousness and Neuroticism. As hypothesised, the illbeing variables presented a negative correlation with academic performance but showed no significance between the variables on tests of correlation. Although, on average participants did present high measures of depression, anxiety, and stress in relation to the DASS-21 scales of measurement (Lovibond & Lovibond, 1995) when analysing sample demographics of the data. These high measures of illbeing may occur due to exterior factors of university environments or participants lifestyles which Beiter et al. (2015) and others explore in their studies. Optimism and Happiness however, indicated significant negative correlation with depression, anxiety, and stress meaning that increased wellbeing decreased illbeing. The insignificance between illbeing and grade raises the question of other variables that affect may affect it. Correlations within my study indicate that the variables of APM, Conscientiousness, and Perseverance all had significant correlations with Grade, a test of multiple regression indicating that APM was the strongest predictor of Grade. The following chapters evaluate and discuss these findings, including their research and practical implications.

4.2 Current Findings

Overall, results of Hypothesis One indicated that Depression and Stress had the largest correlations with academic performance, despite their insignificance. The effect of these measures has been explored across multiple studies, with symptoms of depression

reported most commonly when analysing results of a young adult cohort studying at university (Beiter et al., 2015). The literature has identified that depressive symptoms often correspond with phrases such as “pressure to succeed, post-graduation plans, and lack of sleep” (Beiter et al., 2015), that to some extent has an effect on student’s academic performance. The World Health Organisation describes that depression is one of the leading causes of illness and disability in young adults (W.H.O, 2019), which left untreated can have detrimental effects on mental health. Other phrases such as “increased workload, deadlines, lack of support, and the stress of navigating classes”, have pertained more to feeling of stress than depression (Andrews et al., 2011). Table 2 indicated that participants had high levels of depression and stress, with the average of depression being slightly lower. The high levels of depression and stress could be therefore be attributed to external factors, that may or may not further negatively affect student’s mental health.

The lack of normality within the data set, indicated by the Shapiro-Wilk test in Table 2, could be caused by varying factors that may further negatively affect a young adults mental health. This effect may have indirectly increased scores on the DASS-21 measure (Lovibond & Lovibond, 1995), resulting in extreme outliers that could cause lack of normality within the data set. Assessment of the DASS-21 measure of Depression, Anxiety, and Stress (Lovibond & Lovibond, 1995) shows high internal consistency that accurately describes symptoms related to the DSM’s definition of depression, anxiety, and stress (Andrews et al. 2011). Despite the internal consistency of the measure, not addressing the effect of outliers in the data set can disproportionately increase measures of depression, anxiety, and stress. So, with knowledge of the reliability of the DASS-21 measure (Lovibond and Lovibond, 1995), basic knowledge of these disorders may reduce outliers in the set and possibly normalise the data.

4.2.1 Characteristics of Illbeing

The literature indicated that symptoms of stress are often confused with symptoms of anxiety (McLaughlin et al., 2009), with higher measures of stress occurring within the Results of my study in comparison to levels of anxiety. This confusion could have occurred within the sample if participants did not have the right resources to distinguish between or manage these emotions. Stressful life events have been recognised as contributing to what McLaughlin et al. (2009) describes as "anxiety sensitivity" (2009). Anxiety Sensitivity represents the development of anxiety symptoms in young adults, which when not understood properly can be misunderstood as stress occurring from a stressful life event. Comparatively, maladaptive coping strategies have proven to be the most beneficial coping strategy at reducing high levels of anxiety and stress in young adults (Mahmoud et al. ,2012). Not being able to apply effective coping strategies, has been shown to negatively impact anxiety and stress (Mahmoud et al. 2012). Participants undertaking the DASS-21 measure (Lovibond and Lovibond, 1995) may have gotten confused when rating certain phrases attributing symptoms of anxiety more or less to symptoms of stress. Teaching of how to properly distinguish between these symptoms may be useful for future research, but highlights how unreliable interpretation of emotion can be.

4.3 Perpetuating Variables

Already, it has been discussed that external factors, pre-existing mental health conditions, and misunderstanding of emotions can have negative effects on ratings of depression, anxiety, and stress. Some of these factors can be classified as perpetuating variables, which can be maintained if appropriate coping mechanisms or support is not provided. This can result in negative feelings of illbeing and consequently worse academic performance. A study of British university students identified that more students were

seeking help for symptoms of depression, anxiety, and stress over the course of their university career (Andrews et al., 2004). Findings suggested an effect of external factors such as financial issues, adverse life experiences, and the impact of adversity that corresponded with students who had worse measures of illbeing. The high measures of depression and stress within my study highlights that students need increased support to improve their wellbeing. A test on help-seeking behaviour offered to the participants in the sample would be useful in analysing other factors that could affect academic performance. Although, some students may be reluctant to seeking help as they feel less inclined due to surrounding stigma.

Stigma can be described as surrounding negativity or feelings of embarrassment that help-seeking behaviours could evoke (Clement et al., 2014). It is of most concern when fear of personal information or identity could be disclosed. Students studying at university, who are pressured by academic success, may be negatively affected by the surrounding stigma that may arise if they seek professional help. According to Beyond Blue 75% of mental health issues occur before the age of 25 (ABS, 2008). This reluctance to seek help could be due to some university environments encouraging academic success over maintenance of wellbeing (Clement et al., 2014). Moreover, students with pre-existing mental health conditions may fear exposure due to the common stigma surrounding academic success, which could further negatively impact their wellbeing (Clement et al., 2014). The high measures of illbeing identified within this study suggest correspondence with lack of help-seeking behaviour, that is evident at having compounding effects on wellbeing, self-image, and academic performance. These factors create barriers to change as students attach priority to academic success rather than good wellbeing.

Other perpetuating factors that may negatively affect students and increase their illbeing, is the risk of burnout (Hodge et al., 2020). Hodge et al., (2020) discussed in his study that students can be at risk of burnout if what he introduced as an effort-reward ratio is not properly addressed. This concept can cause burnout if students feel that overcommitment (an extreme effort) is not properly rewarded. Results in this study indicated that from Hypothesis Three only Perseverance showed significant correlations with academic performance. This relation could occur due to participants within the sample not engaging with their studies, because they feel that the effort that they put in was not properly rewarded through their academic performance result. Comparatively, participants could feel more rewarded through their Perseverance of better academic performance, which could improve their wellbeing. Students who show this change could have better wellbeing, which would also contribute to better academic performance.

4.4 The effect of Wellbeing on measures of Illbeing

Wellbeing can be described as the opposite of Illbeing, and is most positive when symptoms of illbeing are reduced. External factors, pre-existing mental health conditions, and the impact of university environments have already been known to negatively affect a person's mental health (Cobo-Rendón et al., 2020). A focus on improving positive traits of wellbeing can therefore be more beneficial in a university environment, with maintenance of positive affirmations and traits most effective at reducing illbeing (Totzeck et al., 2020). Positive traits of wellbeing can be described as Optimism and Happiness, which are measured in this study using the EPOCH measure of adolescent wellbeing (Kern et al., 2016). Sample statistics in Table 2 presented high measures for Optimism and Happiness, in relation to the mean, that were slightly higher for measures of Happiness than for Optimism. Hypothesis Two within my study was supported, and significantly negatively correlated with illbeing. This means that levels of Illbeing decreased in correlation with high levels of Happiness and

Optimism, with both variables negatively affecting levels of depression the most. Slightly higher levels of Happiness could be attributed to the coping mechanisms that participants in the sample applied, or could be due to protective factors and social support that allowed them to better cope within a university environment.

4.5 Protective Factors

Protective Factors concern a person's strengths or factors that reduce the severity of a problem. Protective factors that may positively influence the participants in the sample could be a factor of their support network, exercise, or inclination to seek help if they are struggling with factors of illbeing. Within Australia there are many mental health services targeted at young adults including Headspace, Beyond Blue, and Lifeline. These mental health services address common issues surrounding young people's mental health including depression, anxiety, and stress. My study has already established that Neuroticism positively effects illbeing, with illbeing causing a decrease in academic performance despite the variable's insignificance. These levels of illbeing have been proved to decrease when positive traits of wellbeing are applied. Other factors such as coping strategies and mindfulness-based-strategies have also been proven to beneficially impact students (Mahmoud et al., 2012 & Totzeck et al.,2020). These protective factors that improve wellbeing can be more beneficial when young adult students feel they are more socially supported.

Social Support has been known to positively improve student's wellbeing (Glozah, 2013) and may be an important factor to introduce and analyse in future studies of student's mental health. Glozah (2013) discussed in their study that academic stress reduced, and wellbeing improved when students perceived that they had better social support. Variances between genders occurred when measuring the effect of social support, which showed that males had better wellbeing due to their increased socialisation of 'brotherhood' in

comparison to females. Within my study majority of the sample was female, but variances between genders on measures of illbeing were not analysed, but would be important for future studies. Additionally, an analysis of participants perceived social support would also be useful to see how it affected measures of illbeing. Already it is known that illbeing negatively effects academic performance, with varying effects of wellbeing, Neuroticism, external factors, and coping mechanisms affecting this relationship. But as the relationship between illbeing and academic performance was not significant, it introduces other factors that may affect this relationship.

4.6 The effect of Personality on Illbeing

Neuroticism is a personality factor measured in this study using the OCEANIC - Big Five Personality Traits (Schulze & Roberts, 2006), which concerns a person's lack of emotional stability or instability, and self-confidence (Lebowitz, 2016a). Factors of Neuroticism are commonly cited in reference to depressive symptoms, and can increase depressive levels when people have higher measures of Neuroticism (McDonnell et al., 2020). Comparatively, Table 2 and Table 3 showed moderate measures of Neuroticism which significantly correlated more strongly with measures of stress, than any other illbeing variable which supported Hypothesis Three. This relationship could occur due to the effect of external factors, confusion over distinguishing between emotions, or increased stress over emotional stability and self-confidence that could possibly develop into symptoms associated with depression. Skewness of Neuroticism was positive, as evident in Table 2, which means on average participants had higher levels of Neuroticism. These measures of Neuroticism have been shown to positively correlate with illbeing, which has been established as negatively correlating with academic performance.

4.7 Characteristics of Academic Performance

It is evident throughout the literature and throughout this study that academic performance can be negatively affected by variables of illbeing, and positively through measures of wellbeing. However, the correlation between the illbeing variables and academic performance were not significant, with the most significant correlations between APM, Conscientiousness, and Perseverance. Sample statistics of the data in Table 2 presented a high mean value for grade (academic performance), rating participants in the distinction category of university grading. Although, overall participants indicated a negative decline in scoring when correlated with measures of illbeing. Other measures of Neuroticism, Engagement, and Optimism also correlated negatively with Grade, which is expected for Neuroticism but unusual for Engagement and Optimism due to its association with positive wellbeing. Although, none of these correlations were significant, which suggest that certain variables of wellbeing are more effective when mediated between illbeing and academic performance. Variables associated with decreasing illbeing are therefore less effective when correlated directly with academic performance.

The variables that indicated the highest correlation with grade, that had a direct correlation, were APM, Conscientiousness, and Perseverance. Conscientiousness indicated a large sample demographic value on measures of Personality and corresponded significantly with grade. Perseverance also had moderate levels on measures of Wellbeing and had significance with grade. Although, APM had the largest significant correlation with academic performance. Further Discussion of the effect of these variables is explored below.

4.7.1 The effect of Wellbeing and Personality on Academic Performance

Wellbeing is the opposite of illbeing, and pertains to "the high levels of positive emotions" that people can have (Totzeck et al. 2020). Wellbeing measures of Optimism and Happiness have already been established as decreasing illbeing, but other measures of wellbeing on the EPOCH measure of Adolescent Wellbeing (Kern et al., 2016) also effect academic performance. Increased measures of Engagement and Perseverance have been found to positively affected young adult's academic achievement grades during secondary school (Waters et al., 2019). When applied in a university environment, results of Hypothesis Three were not supported as my study indicated that Perseverance had a positive and significant correlation with grade, but Engagement had an insignificant negative correlation with grade. The positive and significant results of Perseverance could be attributed to its correspondence with wellbeing, that is known to decrease illbeing. Sample demographics of the data in Table 2 found that Perseverance had the second highest mean on the EPOCH measure (Kern et al. 2016), with Engagement significantly lower. Measures of Perseverance could have been higher due to its possible correspondence with the personality trait of Conscientiousness, that has been known throughout the literature to significantly correlate with academic performance. Further analysis of this relationship's effect on Conscientiousness is discussed below.

Conscientiousness describes traits of Perseverance, conformity, and self-discipline (Roccas, Sagiv, Schwartz, & Knafo, 2002), that have been proven to positively predict academic performance (Corker et al., 2012). It is also known to be one of the most significant predictors of academic performance. Results of Table 3 of this study proved that Hypothesis Four was supported as it showed significant positive correlations between Perseverance and Engagement, and Conscientiousness. Perseverance had slightly higher correlations with Conscientiousness than Engagement, which could be due to its correlation with grade and

positive association with wellbeing. It is significant to note however that Engagement had significant positive correlations with Conscientiousness, which was unexpected due to its insignificant correspondence with grade. Conscientiousness also has correspondence with intelligence, that is known throughout the literature as being the most significant predictor of academic performance (Corker et al., 2012). Intelligence ,or APM as it is measured in this study, is known to be the best predictor of grade that is significantly affected by Conscientiousness, and other wellbeing variables.

4.7.2 The effect of intelligence on Academic Performance

It is evident from above that wellbeing positively associates with Conscientiousness, that in turn positively correlates with academic performance and intelligence. Throughout the literature Intelligence is commonly measured using the Ravens Advanced Progressive Matrices – short form (Bors and Stokes, 1998), which measures general intelligence (Gignac, 2008). Other literature also discussed that Conscientiousness and general intelligence were significant predictors of overall first year grade (Furnham, 2012). Hypothesis Six of the study was supported, as APM had significant positive correlations with academic performance. Additionally, sample demographics of the data presented in Table 2, showed that on average APM had Above-average measures of IQ. So, in comparison to the other variables it has the most significant effect on academic performance.

The three factors of APM, Conscientiousness, and Perseverance have been shown to be the most significant factors affecting academic performance, without assuming cause to external factors or other factors affecting illbeing. Tests of multiple regression revealed that APM, Conscientiousness, and Perseverance accounted for a small variance in effecting grade, with values significant when measured together. Although, only APM (or commonly referred to as intelligence) had significance with grade, and indicated the largest beta value increase.

This means that for every one value increase in grade, Intelligence increased by B= 1.02. Conscientiousness had the smallest beta value increase out of the three variables, with Perseverance the second most. It can be assumed that personality being a more solid construct (Costa and McCrae, 1987) it may be the last of things to change within a person, if not at all. Comparatively, wellbeing is a constantly changing concept (Kern et al. 2016), it is most likely to improve or get worse over time. Participants could therefore show better measures of Perseverance, but show small measures of Conscientiousness. The correlation between APM and Illbeing, shown in Table 3, is interesting as it shows moderate correlations but again the variables are not significant. Causality can therefore be inferred on the effect of APM on grade, as it can be said that increased intelligence leads to better grades. It is therefore evident that Intelligence is a greater predictor of grade than illbeing.

Evaluation of the Raven's Advanced Progressive Matrices (Bors & Stokes, 1998) measure of intelligence was rated by Gignac (2015) as an unreliable measure of the g factor of intelligence. As intelligence is a broad construct (Gignac, 2015) exploration of other tests may help identify particular traits that correspond with it. Other tests may include the Wonderlic Personnel Test (Mckelvie, 1989), and the Baddeley Reasoning Test (Silver et al., 1989). Within future studies analysis of other measures of Intelligence would be useful in comparing its correlation with grade. It is evident within the literature that Conscientiousness has strong correlations with academic performance, but on tests of multiple regression it increased the least on measures of beta values. A different measures of this personality trait could be used for future analysis such as the NEO-PI-R (Costa and McCrae, 1987), which is more suitable for an adolescent population. This may indicate stronger correlations of Conscientiousness, as predicted in the literature. The EPOCH measure of adolescent wellbeing (Kern et al., 2016) is most suitable for this study, within the young adult population. As levels of Perseverance were higher than measures of Conscientiousness, it is

evident that wellbeing has more influence over mental health than personality. Future analysis into this finding may be more beneficial in future research. The measures within this study were useful, but other measures may be more efficient in identifying significance between Illbeing and academic performance.

4.8 Implications of Research

The implications of this research help in identifying which variables of illbeing either negatively affect academic performance the most, or if they do at all. The results of this study indicate that illbeing and academic performance do not significantly correlate, so introduction of other affecting variables will be useful for further research into mental health and academic performance. Investigation of how other factors of wellbeing, personality, or intelligence affect self-image and illbeing will ensure that students studying at university have the right support and can improve on applying the right coping mechanisms to their issues. The evidence towards the positive effect of Perseverance, Conscientiousness and APM, as factors of wellbeing, personality, and cognition identify what factors mental health services can focus on to provide better services to university students, as many young adults have the pressure of succeeding academically at university. Overall, this will create better outcomes for young adult students.

4.9 Strengths and Limitations

The strengths of this study are that many reliable measures of mental health, academic performance, wellbeing, personality, and intelligence were utilised to provide information on the affecting variables on the proposed hypotheses. The pre-gathered data set was also collected across two years so yielded an appropriate sample for investigation, as there was a large sample of young adults present in the data set. The limitations of this study were that there was not a measure that analysed the effect of external factors that may influence the

proposed hypotheses or the participants in the sample. A qualitative rather than quantitative analysis, including questionnaires about impacting external factors, would also be appropriate to include in future studies to analyse factors that affect student's mental health.

Future testing pre university and during university, using the same participants, would add further depth to the correlation of illbeing and academic performance. Additionally, the sample could be larger as to possibly provide more normally distributed data but may introduce more errors within analysis. Future analysis on different factors such as external factors, social support, help-seeking behaviours, and the effect of burnout would provide an extensive analysis of their effect on illbeing. Finally, a comparison against other measures of depression, intelligence, wellbeing, and personality would also be useful to test the reliability of the current measures and to provide further scope of analysis.

4.10 Conclusion

As expected, many of the hypotheses were supported and correlated significantly, with variances occurring within Hypothesis One and Three (which were not significant). The statistical analysis of this study showed that overall, the variables were not normally distributed, which could be a result of sampling error or extreme outliers in the data set. Results identified that the illbeing variables did not significantly correlate with grade, and that APM was the best predictor of grade. Future analysis into this correlation would be useful, however, there is evidence of effect as Table 3 shows a moderate but insignificant correlation between the variables of illbeing. Future discussion framed with reference to APM and academic performance, in control of other variables of wellbeing and personality would provide useful information in regard to a university environment.

Academic performance was shown throughout this study to have varying correlations with measures of illbeing and self-image, however some were not significant. There is also

evidence in the literature of effect through external factors, lack of appropriate coping mechanisms, burnout, and perceived social support. Results of this study showed that Perseverance, Conscientiousness, and Intelligence all had significant positive correlations with academic performance. Negative correlations occurred within the variables of depression, anxiety, and stress, Engagement, Neuroticism, and Optimism. Neuroticism did not directly affect academic performance but did affect illbeing, which could negatively affect academic performance. Illbeing and Academic Performance are therefore mediated and effected by other variables, with some positively affecting the relationship more than others.

This study highlights that mental health is an important topic to discuss and framed through the analysis of illbeing and academic performance, it builds upon research already within the literature. Future research on this topic is important to widen the scope of understanding of mental health in young adults, especially when students have increased pressure to succeed academically. Better support and understanding on these affecting correlations could possibly reduce the stigma around help-seeking behaviours, and encourage young adults to prioritise their mental health. Additionally, further research on how other variables, such as intelligence, Conscientiousness, and Perseverance, affect mental health in young adults would also be important to analyse within a university environment. These analyses could result in better coping strategies and support aimed towards students, and could provide better chances for improving academic performance without worsening one’s own mental health.

References

Abebe, A. M., Kebede, Y. G., & Mengistu, F. (2018). Prevalence of Stress and Associated Factors among Regular Students at Debre Birhan Governmental and Nongovernmental Health Science Colleges North Showa Zone, Amhara Region, Ethiopia. *Psychiatry Journal*, . https://doi-org.proxy.library.adelaide.edu.au/10.1155/2018/7534937

Aboalshamat, K., Hou, X. Y., & Strodl, E. (2015). Psychological well-being status among medical and dental students in Makkah, Saudi Arabia: a cross-sectional study. *Medical Teacher*, *37* (01), 75–S81. https://doi-org.proxy.library.adelaide.edu.au/10.3109/0142159X.2015.1006612

Aboalshamat, K., Hou, X. Y., & Strodl, E. (2015). The impact of a self-development coaching programme on medical and dental students' psychological health and academic performance: a randomised controlled trial. *BMC Medical Education*, *15*(01),134-135. https://doi-org.proxy.library.adelaide.edu.au/10.1186/s12909-015-0412-4

Andrews, A., Chong, J.L.Y (2011). Exploring the wellbeing of students at an Australian university. *Journal of the Australian & New Zealand Student Services Association*, *38*(9), https://www.researchgate.net/publication/286979497_Exploring_the_wellbeing_of_students studying_at_an_australian_university

Andrews, B., & Wilding, J. M. (2004). The relation of depression and anxiety to life-stress and achievement in students. *British Journal of Psychology*, *95*(4), 509–521. https://doi.org/10.1348/0007126042369802

Australian Bureau of Statistics, (2008), National Survey of Mental Health and Wellbeing: Summary of Results, *1*(01), 28-29, https://www.abs.gov.au/statistics/health/mental-health/national-survey-mental-health-and-wellbeing-summary-results/latest-release

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders*, *173*(01), 90–96. https://doi.org/10.1016/j.jad.2014.10.054

Branson, V., Dry, M. J., Palmer, E., & Turnbull, D. (2019). The Adolescent Distress-Eustress Scale: Development and Validation. *SAGE Open*, *9*(3), 1-12, https://doi.org/10.1177/2158244019865802

Bors, D. A., & Stokes, T. L. (1998). Raven's Advanced Progressive Matrices: Norms for First-Year University Students and the Development of a Short Form. *Educational and Psychological Measurement, 58*(3), DOI: 10.1177/0013164498058003002

Brugha, T., Bebbington, P., Tennant, C., & Hurry, J. (1985). The List of Threatening Experiences: A subset of 12 life event categories with considerable long-term contextual threat. *Psychological Medicine, 15*(01), 189– 194 DOI: 10.1017/s003329170002105x

Chamorro-Premuzic, T., & Furnham, A. (2003). Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of Research in Personality*, *37*(4), 319–338. https://doi.org/10.1016/s0092-6566(02)00578-0

Cherry, K., (2019). How General Intelligence Influences Performance on Cognitive Tasks. *Verywell Mind.* https://www.verywellmind.com/what-is-general-intelligence-2795210

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, N., Morgan, C., Rüsch, N., Brown, J. S. L., & Thornicroft, G. (2014). What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine*, *45*(01), 11–27. https://doi.org/10.1017/s0033291714000129

Cobo-Rendón, R., Pérez-Villalobos, M. V., Páez-Rovira, D., & Gracia-Leiva, M. (2020). A longitudinal study: Affective wellbeing, psychological wellbeing, self-efficacy and academic performance among first-year undergraduate students. *Scandinavian Journal of Psychology*, *61*(4), 518–526. https://doi.org/10.1111/sjop.12618

Corker, K. S., Oswald, F. L., & Donnellan, M. B. (2012). Conscientiousness in the Classroom: A Process Explanation. *Journal of Personality*, *80*(4), 995–1028, https://doi.org/10.1111/j.1467-6494.2011.00750.x

Dancey, C., Reidy, J., (2002), *Statistics Without Maths for Psychology Using SPSS for Windows (*2nd Edition). Pearson's Education Limited,1-366.

Deshon, R., Chan, D., & Weissbein, D. (1995). Verbal overshadowing effects on Raven's advanced progressive matrices: Evidence for multidimensional performance determinants. *Intelligence*, *21*(2), 135–155. https://doi.org/10.1016/0160-2896(95)90023-3

De Raad, B., & Schouwenburg, H. C. (1996). Personality in learning and education: a review. *European Journal of Personality*, *10*(5), 303–336. https://doi.org/10.1002/(sici)1099-0984(199612)10:5<303::aid-per262>3.0.co;2-2

Dunstan, D. A., Scott, N., & Todd, A. K. (2017). Screening for anxiety and depression: reassessing the utility of the Zung scales. *BMC Psychiatry*, *17*(1). https://doi.org/10.1186/s12888-017-1489-6

Furnham, A. (2012). Learning style, personality traits and intelligence as predictors of college academic performance. *Individual Differences Research*, *10*(3), 117-128. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=psyc9&NEWS=N&AN=2012-26587-001.

Furnham, A. (2001). Self-estimates of intelligence: Culture and gender difference in self and other estimates of both general (g) and multiple intelligences. *Personality and Individual Differences*, *31*(8), 1381–1405. https://doi.org/10.1016/S0191-8869(00)00232-4

Gignac, G. E. (2015). Raven's is not a pure measure of general intelligence: Implications for g factor theory and the brief measurement of g. *Intelligence*, *52*(01), 71–79. https://doi.org/10.1016/j.intell.2015.07.006

Glozah, N. F. (2013). Effects of Academic Stress and Perceived Social Support on the Psychological Wellbeing of Adolescents in Ghana. *Open Journal of Medical Psychology*, *02*(04), 143–150. https://doi.org/10.4236/ojmp.2013.24022

Gunthert, K. C., Cohen, L. H., & Armeli, S. (1999). The role of neuroticism in daily stress and coping. *Journal of Personality and Social Psychology*, *77*(5), 1087–1100. https://doi.org/10.1037/0022-3514.77.5.1087

Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology*, *59*(6), 12161229. https://doi.org/10.1037/0022-3514.59.6.1216

Kern, M. L., Benson, L., Steinberg, E. A., & Steinberg, L. (2016). The EPOCH Measure of Adolescent Well-Being. *Psychological assessment*, *28*(5), 586–597. https://doi-org.proxy.library.adelaide.edu.au/10.1037/pas0000201

Hodge, B., Wright, B., & Bennett, P. (2020). Balancing Effort and Rewards at University: Implications for Physical Health, Mental Health, and Academic Outcomes. *Sage Journals*, https://doi.org/10.1177/0033294119841845

Icekson, T., Kaplan, O., & Slobodin, O. (2020). Does optimism predict academic performance? Exploring the moderating roles of conscientiousness and gender. *Studies in Higher Education*,*45*(3). https://doi.org/10.1080/03075079.2018.1564257

Lee, D., Olson, E.A., Locke, B., Michelson, S.T., & Odes, E. (2009). The Effects of College Counseling Services on Academic Performance and Retention. *Journal of College Student Development*, *50*(3), 305-319. doi:10.1353/csd.0.0071.

Lebowitz, S. (2016a). The 'Big 5' personality traits could predict who will and won't become a leader. *Business Insider*. http://www.businessinsider.com/big-five-personality-traits-predict-leadership-2016-12

Lovibond, S.H., Lovibond, P.F, (2018),Manual for the depression, anxiety, and stress scales – Long Form (DASS-42)– *NovoPsych Psychometrics*, https://novopsych.com.au/assessments/depression-anxiety-stress-scales-long-form-dass-42/

Lovibond S.H, & Lovibond, P. F. (1995). *Manual for the Depression, Anxiety and Stress Scales (DASS-21)*,Psychology Foundation.

Mahmoud, J. S. T., Staten, R. ., Hall, L. ., & Lennie, T. A. (2012). The relationship among young adult college students' depression, anxiety, stress, demography, life satisfaction, and coping styles. *Issues in Mental Health Nursing, 33*(03),149-156. DOI: 10.3109/01612840.2011.632708

McLaughlin, K. A., & Hatzenbuehler, M. L. (2009). Stressful life events, anxiety sensitivity, and internalizing symptoms in adolescents. *Journal of abnormal psychology, 118*(3), 659–669. https://doi.org/10.1037/a0016499

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*(1), 81–90. https://doi.org/10.1037/0022-3514.52.1.81

McCredie, M. N., & Kurtz, J. E. (2020). Prospective prediction of academic performance in college using self- and informant-rated personality traits. *Journal of Research in Personality*, *85*(01), https://doi.org/10.1016/j.jrp.2019.103911

McKelvie, S. J. (1989). The Wonderlic Personnel Test: Reliability and Validity in an Academic Setting. *Psychological Reports*, *65*(1), 161–162. https://doi.org/10.2466/pr0.1989.65.1.161

McDonnell S., Semkovska M., (2020) Resilience as Mediator between Extraversion, Neuroticism, and Depression Symptoms in University Students. *University of Limerick, Ireland*. 4(1), 26-40, http://journalppw.com/index.php/JPPW/article/view/164

Nechita, F., Alexandru, D. O., Turcu-Ştiolică, R., & Nechita, D. (2015). The Influence of Personality Factors and Stress on Academic Performance. *Current health sciences journal*, *41*(1), 47–61. https://doi-org.proxy.library.adelaide.edu.au/10.12865/CHSJ.41.01.07

No Author, (2019) Adolescent mental health. *World Health Organisation (WHO),* https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

No Author. (2017). Media Release - Australians pursuing higher education in record numbers (Media Release).*Australian Bureau of Statistics* https://www.abs.gov.au/AUSSTATS/abs@.nsf/mediareleasesbyReleaseDate/1533FE5A8541D66CCA2581BF00362D1D

No Author (2020) Poverty – Poverty and Inequality. *,Acoss,* http://povertyandinequality.acoss.org.au/poverty/

No Author. (2015) Psychological Testing: Raven's progressive matrices scoring interpretation, *Psychological Testing*, https://www.mentalhelp.net/psychological-testing/ravens-progressive-matrices/

No Author, (2015) Stress: Signs, Symptoms, Management & Prevention. *Cleveland Clinic,* https://my.clevelandclinic.org/health/articles/11874-stress

No Author, (2016) Two-thirds of university students living below the poverty line, ABC News. https://www.abc.net.au/news/2013-07-15/majority-of-students-in-poverty2c-research-shows/4821230

No Author, (2018) What Is Anxiety & The Effects on Mental Health, *Headspace*, https://headspace.org.au/young-people/what-is-anxiety-and-the-effects-on-mental-health/

No Author, (2018), What is Depression – for Young People, *Headspace*, https://headspace.org.au/young-people/understanding-and-dealing-with-depression-for-young-people/

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin*, *135*(2), 322–338. https://doi.org/10.1037/a0014996

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*(2), 353–387. https://doi.org/10.1037/a0026838

Ridgell, S.D. Lounsbury, J.W. (2004). Predicting Academic Success: General Intelligence, "Big Five" Personality Traits, and Work Drive. *College Student Journal*, *38*(4), 607-619.

Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). The Big Five personality factors and personal values. *Personality and Social Psychology Bulletin*, *28*(6), 789-801. https://doi.org/10.1177/0146167202289008

Cobo-Rendón, R., Mar, I., Erez-Villalobos, Leiva, M. G., Páez, D., (2020). A longitudinal study: Affective wellbeing, psychological wellbeing, self-efficacy and academic performance among first year undergraduate students. *Development and Aging*, *61*(04), https://doi.org/10.1111/sjop.12618

Sanchez-Ruiz, M.-J., & El Khoury, J. (2019). A Model of Academic, Personality, and Emotion-Related Predictors of University Academic Performance. *Frontiers in Psychology*, *10*(01). https://doi.org/10.3389/fpsyg.2019.02435

Scheidt, M., Godwin, A., Senkpeil, R. R., Ge, J. S., Chen, J., Self, B. P., Widmann, J. M., & Berger, E. J. (2018). Validity evidence for the SUCCESS Survey: Measuring non-cognitive and affective traits of engineering and computing students. *American Society for Engineering Education,*1-28. https://docs.lib.purdue.edu/enewp/4

Schulze, & Roberts, R. D. (2006). Assessing the Big-Five: Development and validation of the Openness Conscientiousness Extraversion Agreeableness Neuroticism Index Condensed (OCEANIC). *Journal of Psychology, 214*(01),133-149. https://www.researchgate.net/publication/233107015

Silver, N. C., Phelps, G. R., & Dunlap, W. P. (1989). Baddeley's Grammatical Reasoning Test: active versus passive processing differences re-examined. *Language Testing*, *6*(2), 164–171. https://doi.org/10.1177/026553228900600204

Totzeck, C., Teismann, T., Hofmann, S., Brachel, R., Pflug, V., Wannemuller, A., Margraf, J. (2020). Loving-Kindness Meditation Promotes Mental Health In University Students. *Mindfulness,11*(01),1623-1631. https://doi.org/10.1007/s12671-020-01375-w

Van der Meer, J., Wass, R., Scott, S., & Kokaua, J. (2017). Entry Characteristics and Participation in a Peer Learning Program as Predictors of First-Year Students' Achievement, Retention, and Degree Completion. *AERA Open*. https://doi.org/10.1177/2332858417731572

Yusoff, M. S. (2013). Associations of pass-fail outcomes with psychological health of first-year medical students in a malaysian medical school. *Sultan Qaboos University medical journal*, *13*(1), 107–114. https://doi-org.proxy.library.adelaide.edu.au/10.12816/0003203

Waters, L. E, Loton, D., Jach, H. K. (2019). Does strength-based parenting predict academic achievement? The mediating effects of perseverance and engagement. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, *20*, 1121-1140. https://doi.org/10.1007/s10902-018-9983-1

Zeng, G. & Kern, M. L. (2019). The Chinese EPOCH measure of adolescent wellbeing: Further testing of the psychometrics of the measure. *Frontiers in Psychology*, *10(*01), https://doi.org/10.3389/fpsyg.2019.01457