



Cardiff
Metropolitan
University

Prifysgol
Metropolitan
Caerdydd

Cardiff Metropolitan University

Prifysgol Metropolitan Caerdydd

B.Sc. (Hons) Psychology

Final Year Project

Resilience and Subjective Well-Being among
University Students

2018

Dissertation submitted in partial fulfilment of the
requirements of Cardiff Metropolitan University for the
degree of Bachelor of Science

Declaration

DECLARATION

I hereby declare that this dissertation is the result of my own independent investigation under the supervision of my tutor. The various sources to which I am indebted are clearly indicated. This dissertation has not been accepted in substance for any other degree, and is not being submitted concurrently for any other degree.

Acknowledgements

I would like to thank my supervisor Dfor his help and guidance during the completion process of this dissertation.

I would also like to thank the staff at Cardiff Metropolitan University as well as my friends and family for their support over the three years of this course.

Finally, I would like to thank all of the participants who took time out of their day to take part in my study.

Abstract

This study investigated the predictive role of resilience in the subjective well-being of university students. A multiple regression analysis was used to examine the relationship between resilience, as measured by the Brief Resilience Scale (BRS), and the three main components of subjective well-being, as measured by the Oxford Happiness Questionnaire (OHQ), the Satisfaction with Life Scale (SWLS) and the Positive (PA) and Negative (NA) Affect Schedule (PANAS). Previous research has shown that several cognitive and affective associated with increased subjective well-being correlate with the resources of resilience. 30 self-selecting university students aged 18-25 completed the study online via the survey host Qualtrics. It was predicted that the BRS would overall positively correlate with the OHQ, SWLS and the PA subscale of the PANAS, and would negatively correlate with the NA subscale of the PANAS. The results indicated that Positive Affect (PA) was the only component of subjective well-being to positively predict scores of the BRS. It is suggested that positive affect has a significant mediating role to play in the relationship between resilience and subjective-well-being, and may be a key element in understanding the improved health outcomes associated with resilience. The results also support the use of positive psychological interventions for building resilience to acute stressors in students.

Table of Contents

i.	Declaration	
ii.	Acknowledgements	
iii.	Abstract	
1.	Introduction	1-8
1.1.	Rationale	9
2.	Methodology	9-12
2.1.	Design	9
2.2.	Participants	10
2.3.	Materials	10-11
2.4.	Procedures	12
2.5.	Method of Analysis	12
3.	Results	12-13
3.1.	Pearson's Correlation	12
3.2.	Multiple Regression	13
4.	Discussion	14-18
5.	References	19-24
6.	Declaration of Word Count	25

Tables:

Table 1: Beta coefficients and associated t and p values for the BRS and the SWLS, OHQ, PA and NA. 13

1. Introduction

The transition to university represents a major life change for many adolescents. Students may further face a myriad of daily or acute stressors as they learn to cope with the many demands of university life alongside their own developmental tasks (Hamaideh, 2011; Towbes & Cohen, 1996). Although there is less attention given to health promotion that aims to modify the effects of such stressors affecting everyday life (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003), acute stress responses have previously been associated with certain health-related outcomes in students. For example, the effectiveness of exam stress as a model of acute psychosocial stress has been demonstrated on immunological, neuroendocrine, physiological and psychological measures (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Zunhammer, Eberle, Eichhammer, & Busch, 2013). Acute stress is the most common form of stress that results from the demands and pressures of the recent past and the anticipated demands and pressures of the near future (American Psychological Association, 2018). Two phases in particular are involved during acute stress events: (1) the instantaneous activation of the sympathetic nervous system, involving the release of catecholamine adrenaline and noradrenaline from the adrenal medulla, which results in autonomic responses such as an increase in heart rate and enhanced blood flow to the skeletal muscles in order to prepare for an eventual 'fight-or-flight' response, and (2) the slower-acting activation of the hypothalamus-pituitary-adrenal (HPA) axis, which results in the release of glucocorticoids such as cortisol from the adrenal cortex in order to promote energy replenishment and to re-establish homeostasis (Nicolaidis, Kyratzi, Lamprokostopoulou, Chrousos, & Charmandari, 2015).

The normal stress neuroendocrine responses represent an adaptive regulatory system that increases the chances of survival during certain dangerous situations. In modern day environments however, a diverse range of psychosocial stimuli including complex interpersonal situations and work deadlines more frequently elicit the responses of the stress system (McEwan, 2007). Stress can thus become maladaptive with repetitive and prolonged activation of the HPA axis, which can alter gene expression and immune function, and consequently increase the risk of numerous acute and chronic health conditions including infections, autoimmune diseases, sleep disorders and depression (Chrousos, & Kino, 2007; Padgett & Glaser, 2003). However, there remains widespread uncertainty regarding the nature and effects of such stress throughout the lifespan. For instance, not all individuals confronting stress will develop consequential impacts upon health (Chiang, Turiano, Mroczek & Miller, 2018). Additionally, some students show better psychological adjustment to stressful circumstances at university over time than others (Gall, Evans, & Bellerose, 2000). Individual brain responses to stressors may play a key role in the overall outcomes of stress. Specifically, the structural remodelling of neural architecture, as well as the alteration of systemic functions following stress-induced changes signalling successful adaptation or resilience; or the persistence of these changes when stress ends indicating impaired structural brain plasticity or vulnerability (McEwen, Bowles, Gray, Hill, Hunter, Karatsoreos, & Nasca, 2015; McEwen, Gray, & Nasca, 2015). These dynamic processes are further found to be influenced by complex factors including individual attributes, social contexts, and the nature of stressors, such as their number, intensity and persistence throughout the lifespan (Herrman, Stewart, Diaz-Granados, Berger, Jackson, & Yuen, 2011; Shonkoff, Boyce, & McEwen, 2009).

Heterogeneities in the health effects of stressful events may point towards the moderating role of resilience and vulnerabilities in such associations. Within psychological literature, several different meanings are associated with the term resilience, though it is generally used to refer to a dynamic process encompassing positive adaptation within the context of significant adversity (Luthar, Cicchetti & Becker, 2000). From this notion of resilience, two critical conditions are presupposed: (1) the exposure to significant threat or adversity, and (2) the achievement of positive adaptations despite an assault on developmental processes (Luthar et al, 2000). In recent years, the empirical study of resilience has transformed deficit-focused models of both mental and physical health that place predominant focus upon risk, pathology and treatment, whilst neglecting human capabilities and adaptive systems that promote healthy development and functioning in spite of risk and adversity (Charney, 2004; Masten, 2001). This phenomenon has been found to be a surprisingly common and normative trajectory for many individuals exposed to loss or potentially traumatic events (Bonanno, 2004), and is further found to be an innate and natural capacity for many individuals (Kelley, 2005), as well as something which can be successfully developed in an individual through practice (Masten, 2001; Mills & Spittle, 2001). However, there remain major conceptual and methodological ambiguities within resilience research that may limit the overall scientific value of this construct and prevent a full realisation of its possible potential (McCubbin, 2001). One longstanding issue within resilience literature relates to discrepancies within the definitions and central terminology used to define and conceptualise resilience.

The early influential theory of 'ego-resiliency' (Block & Block, 1980) is conceptualised as an individual characteristic encompassing traits that reflect resourcefulness, sturdiness and flexibility of functioning in response to various environmental circumstances. Using this definition, it cannot be assumed that adversity of some kind has been experienced by those labelled as ego-resilient (Luthar et al, 2000). Moreover, the conceptualisation of ego resiliency as a fixed or stable personal attribute, rather than a dynamic developmental process has been criticised for inviting the perception that individuals who do not have this attribute simply "do not have what it takes" to overcome adversity (Masten, 1994; Windle, 2011). There is also great variation in the measurement of key constructs within resilience research. Many popular psychometric instruments designed to measure resilience feature a broad range of constructs including "protective factors that support resiliency," "successful stress-coping ability," "central protective resources of health adjustment," and "resilient coping behaviour" (Ahern, Kiehl, Lou Sole, & Byers, 2006). For example, The Resilience Scale (Wagnild & Young, 1993) is designed to assess equanimity, perseverance, self-reliance, meaningfulness, and existential aloneness. Similarly, the Connor Davidson Resilience Scale (Connor & Davidson, 2003) aims to assess characteristics such as self-efficacy, sense of humour, patience, optimism, and faith. Such measures of resilience may therefore only target factors such as personal characteristics and coping styles that aid positive adaption, rather than resilience itself, and so may only measure certain 'resilience resources' (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008).

It cannot be clearly determined whether psychometric measures reliably assess resilience, whether resilience is in fact related to resilience resources, or whether certain health and well-being outcomes among individuals are moderated by resilience. Furthermore, much of the focus of resilience research concerns coping and recovery following bereavement and traumatic events (Bonanno, Wortman, Lehman, Tweed, Haring, Sonnega & Nesse, 2002; Bonanno, 2004), and the establishment of resilience within 'high-risk' individuals (Kelley, 2005) and children (Masten, 2001; Alvord & Grados, 2005). There is thus less focus given to exploring resilience to more frequent daily stressors, such as those faced by young adults and university students (Olsson et al, 2003). In order to overcome some of these issues, the Brief Resilience Scale (BRS; Smith et al, 2008) was developed. The BRS aims to measure resilience when it is defined as 'the ability to bounce back or recover from stress', which may be closest to its original meaning and thus may give a more direct measure. When tested, the BRS has been found to reliably represent one factor (resilience itself), to directly relate to both resilience resources and certain health outcomes, and to predict health outcomes beyond resilience resources (Smith et al, 2008). It has also been suggested that this scale could be a useful outcome measure within the context of stress, which may be useful for the study of resilience among university students (Windle, Bennett, & Noyes, 2011).

There are numerous advantages to applying this conceptualization of resilience within student health and well-being settings. Firstly, rather than an exclusive focus on dysfunction within stress, there is an opportunity for stress interventions that are focused around core themes within positive psychology to be utilised, which have been identified as essential for the development of resilience in individuals (McEwan et al, 2015). In addition, resilience is viewed as a complex and dynamic process related to certain cognitive and affective processes including flourishing and positive affect, which are associated with increased levels of subjective well-being (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Ryff & Singer, 2000). Subjective well-being (SWB) may be another construct of high importance for university students in the promotion of positive development (Bird & Mackle, 2012). Rather than a singular construct, SWB is recognised as a multi-dimensional phenomenon that includes emotional responses, domain satisfactions and global judgements of life satisfaction (Diener, Suh, Lucas, & Smith, 1999). Influential theories posit that SWB may primarily encompass happiness, life satisfaction, the presence of positive affect, and the relative absence of negative affect (Myers & Diener, 1995). These basic facets of SWB are moreover separable and can have distinctive associations with other variables, meaning they should be assessed individually (Diener, Heintzelman, Kushlev, Tay, Wirtz, Lutes, & Oishi, 2017).

Happiness, for example, is associated with a high frequency of pleasant thoughts and emotions due to a more positive appraisal of the self and ongoing events (Myers & Diener, 1995), and can be assessed using self-report measures such as the Oxford Happiness Questionnaire (OHQ; Hills & Argyle, 2002). Cognitively, SWB includes a sense of overall satisfaction with life, which is influenced by a sense of satisfaction with a range of dynamic and individual factors (Myers & Diener, 1995). The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larson, & Griffin, 1985) is one measure designed to assess the global life satisfaction of an individual. At an affective level, SWB also reflects an abundance of pleasant emotions, and a relative absence of unpleasant emotions such as anxiety, depression, and anger (Diener et al, 2017). The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is one such measure that aims to assess the pure markers of Positive Affect (PA) and Negative Affect (NA). An extensive body of research has demonstrated the validity of such measures of SWB (Diener, Inglehart, & Tay, 2013). These measures are shown to correlate with non-self-report measures of SWB, and can predict other related constructs, such as social support, that are considered separate from SWB (Diener et al, 2017). Interestingly, there is increasing evidence that increased SWB can also be a strong predictor of better health and longevity among individuals (Diener & Chan, 2011; Xu & Roberts, 2010). Therefore, another possible way to lead to improved health outcomes among individuals is through increasing subjective well-being (Mak, Ng & Wong, 2011).

An exploration of the relation between resilience and subjective well-being within the student demographic may be useful in order to enhance resilience and optimal functioning, as well as lessen stress by concentrating on a more strength-based approach to the modifications of resilience and well-being throughout the life cycle. A handful of studies have directly investigated the relationship between resilience and well-being in students. However, marked differences in the definitions and terminology used in the measurements of resilience may result in varied conclusions and disparate estimates resilience. Furthermore, there have been no studies that have investigated the relationship between resilience and the basic components of SWB. Nevertheless, all studies reviewed revealed an association between resilience and well-being in students. A medium positive relationship between resilience and well-being has been found among university nursing students using the Connor-Davidson resilience scale (Chow, Tang, Chan, Sit, Choi, & Chan, 2018), and secondary school pupils using the BRS (Zeng, Hou, & Peng, 2016). Resilience has further been found to be a significant predictor of well-being among university students of psychology, nursing and medicine using mixed measures of resilience including 'resilience building skills' such as positive self-talk, mindfulness meditation and self-management, and the personality traits of 'emotional' and 'bounce-back' resilience (Bore, Pittolo, Kirby, Dluzewska, & Marlin, 2016; Chow et al, 2018; Souril, & Hasanirad, 2011). Positive thinking and optimism have been identified having a significant mediating role in this association, as resilience is found to be linked to adaptive emotion regulation (Karreman & Vingerhoets, 2012). This ability enables an individual to more readily identify positive meanings in adversity, which buffers against negative emotions and is consequently associated with improved well-being (Mak et al, 2011; Tugade & Fredrickson, 2004). However, an investigation between resilience itself and the basic components of SWB in the students is needed in order to gain a clearer insight into this possible association.

1.1 Rationale

This study aims to examine the role of resilience and its interactions with the components of subjective well-being in a sample of UK university students, and to investigate whether resilience can predict subjective well-being in students. Previous research has shown that the characteristics associated with resilience, or the resources of resilience, correlate with the affective and cognitive processes that encompass subjective well-being. It is therefore assumed that the measure of resilience used within the current study may also predict subjective well-being among university students. There are several different meanings associated with the word resilience which current measures of resilience do not specifically target (Smith et al, 2008). Research specifically targeting resilience itself is therefore needed in order to gain a clearer insight into the impact resilience may have upon the subjective well-being of an individual. It is also clear that young adults and university students are a neglected demographic within resilience literature who may potentially benefit from the application of strength-based approaches within health and well-being practice.

It is hypothesised that a) there will be an overall positive correlation between the BRS, the OHQ, the SWLS and the PA; and b) the BRS will negatively correlate with the NA.

2. Methodology

2.1. Design

The current study used quantitative, self-report methods and a correlational analytic survey design. The three independent variables were given as the participant's results for the three measures of subjective well-being; the OHQ (Hills & Argyle, 2002), the SWLS (Diener et al, 1985) and the PANAS (Watson et al, 1988). The dependant variable was given as the participant's results for the measure of resilience; the BRS (Smith et al, 2008). The data collected from all measures was ordinal data.

2.2. Participants

A self-selecting opportunity sample involving 30 university students aged between 18-25 years were recruited online through the use of Cardiff Metropolitan Participant Panel and through social media. Some participants may have been friends of the researcher. Participants who completed the study through Cardiff Metropolitan's Participant Panel were rewarded with two course credits in return for participation. However, participants who completed the study through social media received no rewards for participation. The sex of participants was not recorded.

2.3. Materials

The Brief Resilience Scale (BRS; Smith, Dalen, Wiggins, Tooley, Christopher & Bernard, 2008)

The BRS was used in order to measure the degree of resilience within the participants. The BRS consists of 6 items that are rated on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). A sample item is "It does not take me long to recover from a stressful event." The BRS demonstrates satisfactory levels of internal consistency among students (Smith et al, 2008).

The Oxford Happiness Questionnaire (OHQ; Hills & Argyle, 2002).

The overall happiness of participants was measured using the OHQ. The OHQ is a 29-item unidimensional measure that assesses overall personal happiness. A sample item is "I find most things amusing". Participants are asked to rate the degree of their happiness on a 6-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). Hills and Argyle (2000) have demonstrated the convergent validity and construct validity of the OHQ among university students.

The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985).

Overall life satisfaction was measured with the SWLS. The SWLS is a five-item measure of an individual's judgment of their life satisfaction. A sample item is "I am satisfied with my life". Participants are asked to indicate the extent to which they agree or disagree that the items reflect how they view their lives by using a 7-point Likert-type scale that ranges from 1 (strongly disagree) to 7 (strongly agree). The construct validity and convergent validity of the SWLS have been demonstrated (Diener et al, 1985).

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988).

Positive affect and negative affect was assessed with the PANAS. The PANAS contains a total of 20 items split into 2 subscales. The PA (10 items) subscale assesses active, alert, and enthusiastic states. In contrast, the NA (10 items) subscale measures subjective distress and unpleasant mood states, such as anger, contempt, fear, and nervousness. A sample item of the PA is "Interested", and a sample item of the NA is "Nervous". Participants are asked to rate on a 5-point Likert-type scale the extent to which they have experienced each mood state in the present moment or in the past week. The scale ranges from 1 (very slightly or not at all) to 5 (extremely). The PANAS is shown to be highly internally consistent among university students (Watson et al., 1988).

Qualtrics

The online survey host qualtrics was used in order to set up the study and to collect data from the participants.

2.3. Procedure

Participants were linked to the questionnaires online either via Cardiff Metropolitan Participant Panel or via social media sites. Participants were at first briefed about the study via an information sheet, and were made aware of their right to withdraw at any point during the study. It was assumed that participants gave their informed consent after being presented with the statement 'I have read and understood the above information and I consent, begin the study'. Following this, participants were presented with the BRS, OHQ, SWLS and PANAS successively, which took approximately 30 minutes to complete. Upon completion, participants were thanked for their participation. Participants completed the study in their own time with no researcher supervision. Uncompleted responses were removed from the analysis.

2.4. Method of Analysis

The method of analysis used in the analysis of the data was a simple multiple regression analysis, which correlated each of the three measures of subjective well-being; the OHQ, SWLS and PANAS, with the measure of resilience; the BRS.

3. Results

3.1. Pearson's correlation

A Pearson's correlation was performed in order to determine the relationship between the scores of the BRS and the scores of the OHQ, SWLS, PA and NA. The relationship between the BRS and the OHQ was revealed to be positive and non-significant: $r = .338$, $N = 30$, $p = .068$ (two-tailed). The relationship between the BRS and the SWLS was positive and significant: $r = .362$, $N = 30$, $p = .050$ (two-tailed). The relationship between the BRS and the PA was positive significant: $r = .459$, $N = 30$, $p = .011$ (two-tailed). The relationship between the BRS and the NA was negative and non-significant: $r = -.101$, $N = 30$, $p = .596$ (two-tailed).

3.2. Multiple Regression

Before a multiple regression was performed, preliminary analyses were conducted in order to ensure no violations of assumption. A histogram revealed that residuals were normally distributed and a scatterplot revealed a linear relationship. A Cook's Distance statistic revealed no multivariate outlier's. However, tolerance values indicated an excessive multicollinearity between the IV's. Bivariate correlations revealed that the OHQ correlated too highly with the other IV's. Therefore the OHQ was omitted from the analysis. Once the OHQ was omitted, the SPSS output was satisfactory.

The multiple regression between the BRS and the measures of subjective well-being (SWLS, OHQ, PA and NA) revealed the $R = .52$ and the adjusted R-square = .18 with a standard error of estimate at .79. Overall, there was a significant model fit: $F(3, 26) = 3.25, p = .038$. The contribution of each IV is summarised below in Table 1.

Table 1: Beta coefficients and associated t and p values for the BRS and the SWLS, OHQ, PA and NA.

	Standardised Beta Coefficient	t	p
SWLS	.327	1.41	.169
PA	.391	2.02	.053
NA	.250	1.15	.258

**Correlation significant at the .01 level (two-tailed), *Correlation is significant at the .05 level (twotailed)

As can be seen above in Table 1, the only measure of subjective well-being that was a significant positive predictor of the DV was the PA: $\beta = .39, p = .053$. The SWLS revealed a positive relationship with the DV that failed to reach statistical significance. The NA held a negative relationship with the DV that was not significant.

To summarise, Positive Affect (PA) was found to be the only a positive predictor of BRS scores reaching statistical significance.

4. Discussion

The aim of this study was to explore the predictive role of resilience in the subjective well-being of university students, and examine whether certain components of subjective well-being had a more prominent role in this relationship over others, as previous research has shown that the resources of resilience correlate with the affective and cognitive processes associated with subjective well-being (Cohn et al, 2009; Ryff & Singer, 2000). Overall, the results of this study did not support the hypothesis that resilience would predict increased subjective well-being. However, one component of subjective well-being, Positive Affect, as measured by the PANAS, significantly and positively predicted scores of the BRS, as hypothesised. The other facet of subjective well-being, Satisfaction with Life, as measured by the SWLS, positively correlated with BRS scores, though this did not reach any statistical significance. Furthermore, Negative Affect correlated negatively with BRS scores as expected, although this relationship also did not reach significance. One main component of subjective well-being, Happiness, as measured by the OHQ was removed from the analysis for correlating too highly with the other components of subjective well-being measured. From these results, the first hypothesis (a), which predicted the BRS would positively predict OHQ, SWLS and PA scores was only partially accepted. The second hypothesis (b), which predicted the BRS would negatively predict NA scores was also only partially accepted.

The significant positive relationship found between the BRS and positive affect in students is encouraging, and further mirrors the relationship found between resilience, positive affect and optimism among students in previous studies (Souri & Hasanirad, 2011). Resilience among students may thus be mediated by the presence of increased positive affect. This finding may also provide support for research that suggests resilience is associated with adaptive emotion regulation, and the ability to readily identify more positive meanings within adversity which can buffer against negative emotion (Karreman & Vingerhoets, 2012; Mak et al, 2011; Tugade & Fredrickson, 2004). Biopsychosocial models of health posit that complex interacting mechanisms at cellular, tissue, interpersonal and environmental levels compromise the total system of health (Fava & Sonino, 2008). Psychosocial factors such as positive affect that are influenced by resilience may therefore operate to facilitate, sustain and modify health outcomes to acute stressors, meaning that resilience may also function to improve health outcomes among individuals by enhancing positive affect. Interestingly, the other subscale of the PANAS measured, Negative Affect, revealed a negative relationship with the BRS that did not reach statistical significance. As the definition of resilience presupposes exposure to some kind of stressor or adversity (Luthar et al, 2000; Smith et al, 2008), resilience may not necessarily represent an overall absence of negative affect, but rather a combination of both positive and negative affect and a more balanced and interactive approach to overcoming adversity (Wong, 2011). Moreover, attitudes towards negative affect within Western cultures may partially shape this notion of resilience, as generally, negative emotions are associated with dysfunction within stress research (Wong, 2011). As the facet of Life Satisfaction revealed a positive and non-significant relationship with the BRS, the results may further provide support for the notion of subjective well-being as a multi-dimensional construct with separable components that have distinct associations with other variables (Diener et al, 2017). However, it is still possible that with a larger sample size, results may have reached significance.

Overall, the findings of this study may suggest that the basic components of subjective well-being do not predict resilience among university students due to the separable nature of these components, which have distinct relationships with the construct resilience. The facet of Positive Affect appears to have a significant mediating relationship with resilience in students, and may be one of the key components influencing heterogeneities in the health outcomes of exposure to acute stressors. These results therefore provide support for the use of stress interventions that aim to modify the effects of acute stressors in students by utilising psychological interventions focused around themes within positive psychology that aim to encourage a realisation of the positive outcomes of various situations, whilst also encouraging a more balanced view of emotion by understanding the integration of both negative and positive affect (Wong, 2011). One such intervention that has been suggested to be useful for the promotion of resilience is that of mindfulness (McEwan, 2015), as a focus on the present moment may encourage a more balanced view of events. Such interventions may be particularly useful within university health and well-being settings, especially when targeted at students with predispositions towards high levels of trait negative affect, such as those with anxiety and depression (Watson, Clark, & Carey, 1988). As the other components of subjective well-being yielded varied results in their relationship between resilience, it is concluded that happiness and satisfaction with life may not represent outcomes of increased resilience. However, further research utilising these components is still needed in order to rule out such an association with more certainty.

There are several other methodological issues present in this study that may be addressed in future research. The sex of participants was not recorded in the current study, yet it may be useful to record possible sex differences with regard to resilience and subjective well-being in students, as although this has been an overlooked area of study, previous research has identified sex differences within brain plasticity to stressors (McEwan et al, 2015). Additionally, the sample size in this research study was not sufficient enough to be able to draw reliable data that can be applied to a wide range of students. It is also possible that a larger sample would have meant the component of happiness would not correlate excessively with the other facets of subjective well-being and could thus be discussed as an independent factor of subjective well-being, as suggested within the literature (Diener et al, 2017; Myers & Diener, 1995) that may also be related to resilience. There are also methodological issues involving the measures of subjective well-being used in the study. Whilst there is a large body of evidence demonstrating the validity of the subjective well-being measures used within the study (Diener et al, 2017), with the absence of any 'gold standard' measure of highly individual constructs such as subjective well-being, several factors could be influencing the results of these self-report measures, including social desirability response biases. Moreover, a multitude of confounding factors not otherwise measured by the constructs of resilience and subjective well-being, such as social support may further be influencing results. Therefore, an interesting direction for future research on this topic area may be the utilisation of methods other than ordinal, self-report measures, such as measures of behaviour or the recall of positive and negative events.

In summary, resilience can be viewed as a complex and dynamic developmental process that can influence positive health outcomes among individuals. Whilst resilience did not overall prove a successful predictor of the basic components of subjective well-being, the facet of Positive Affect has generated promising insights into this association. There still remains much that is unknown about resilience and its impacts on health throughout the lifespan, yet research detailing the resilience to acute stressors among university students may possibly be an important area of study that is particularly useful for the implementation stress interventions within university settings. Furthermore, interventions focused around cultivating a more positive outlook on events may be useful for many students facing acute stressors associated with university life. In particular, such interventions may be useful for clinical populations, such as those with anxiety and depression. Finally, positive affect may be one of the key components of well-being that promote brain plasticity to stressors to acute stressors among students and young adults.

5. References

Ahern, N. R., Kiehl, E. M., Lou Sole, M., & Byers, J. (2006). A review of instruments measuring resilience. *Issues in comprehensive Pediatric nursing, 29*(2), 103-125.

American Psychological Association (2018). Stress: The different kinds of stress. Retrieved from <http://www.apa.org/helpcenter/stress-kinds.aspx>

Alvord, M. K., & Grados, J. J. (2005). Enhancing Resilience in Children: A Proactive Approach. *Professional psychology: research and practice, 36*(3), 238.

Bird, J. M., & Markle, R. S. (2012). Subjective Well-Being in School Environments: Promoting Positive Youth Development Through Evidence-Based Assessment and Intervention. *American Journal of Orthopsychiatry, 82*(1), 61-66.

Block, J. H., & Block, J. (1980). role of ego-control and ego-resiliency in the organization of behavior. Development of cognition, affect, and social relations/edited by W. Andrew Collins.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events?. *American psychologist, 59*(1), 20.

Bonanno, G. A., Wortman, C. B., Lehman, D. R., Tweed, R. G., Haring, M., Sonnega, J., & Nesse, R. M. (2002). Resilience to loss and chronic grief: a prospective study from preloss to 18-months postloss. *Journal of personality and social psychology, 83*(5), 1150.

Bore, M., Pittolo, C., Kirby, D., Dluzewska, T., & Marlin, S. (2016). Predictors of psychological distress and well-being in a sample of Australian undergraduate students. *Higher Education Research & Development, 35*(5), 869-880.

Chamberlain, K., & Zika, S. (1990). The minor events approach to stress: Support for the use of daily hassles. *British Journal of Psychology, 81*(4), 469-481.

Charney, D. S. (2004). Psychobiological mechanisms of resilience and vulnerability. *Focus*.

- Chiang, J. J., Turiano, N. A., Mroczek, D. K., & Miller, G. E. (2018). Affective reactivity to daily stress and 20-year mortality risk in adults with chronic illness: Findings from the National Study of Daily Experiences. *Health Psychology, 37*(2), 170.
- Chow, K. M., Tang, W. K. F., Chan, W. H. C., Sit, W. H. J., Choi, K. C., & Chan, S. (2018). Resilience and well-being of university nursing students in Hong Kong: a cross-sectional study. *BMC medical education, 18*(1), 13.
- Chrousos, G. P., & Kino, T. (2007). Glucocorticoid action networks and complex psychiatric and/or somatic disorders. *Stress, 10*(2), 213-219.
- Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: positive emotions increase life satisfaction by building resilience. *Emotion, 9*(3), 361.
- Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and anxiety, 18*(2), 76-82.
- Diener, E., & Chan, M. Y. (2011). Happy people live longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being, 3*(1), 1-43.
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment, 49*(1), 71-75.
- Diener, E., Heintzelman, S. J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L. D., & Oishi, S. (2017). Findings all psychologists should know from the new science on subjective well-being. *Canadian Psychology/psychologie canadienne, 58*(2), 87.
- Diener, E., Inglehart, R., & Tay, L. (2013). Theory and validity of life satisfaction scales. *Social Indicators Research, 112*(3), 497-527.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological bulletin, 125*(2), 276.
- Fava, G. A., & Sonino, N. (2008). The biopsychosocial model thirty years later. *Psychotherapy and psychosomatics, 77*(1), 1-2.

- Gall, T. L., Evans, D. R., & Bellerose, S. (2000). Transition to first-year university: Patterns of change in adjustment across life domains and time. *Journal of Social and Clinical Psychology, 19*(4), 544-567.
- Hamaideh, S. H. (2011). Stressors and reactions to stressors among university students. *International journal of social psychiatry, 57*(1), 69-80.
- Herrman, H., Stewart, D. E., Diaz-Granados, N., Berger, E. L., Jackson, B., & Yuen, T. (2011). What is resilience?. *The Canadian Journal of Psychiatry, 56*(5), 258-265.
- Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Personality and individual differences, 33*(7), 1073-1082.
- Karreman, A., & Vingerhoets, A. J. (2012). Attachment and well-being: The mediating role of emotion regulation and resilience. *Personality and Individual differences, 53*(7), 821-826.
- Kelley, T. M. (2005). Natural resilience and innate mental health.
- Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Psychoneuroimmunology: Psychological influences on immune function and health. *Journal of consulting and clinical psychology, 70*(3), 537.
- Mak, W. W., Ng, I. S., & Wong, C. C. (2011). Resilience: enhancing well-being through the positive cognitive triad. *Journal of counseling psychology, 58*(4), 610.
- Masten, A. S. (1994). Resilience in individual development: Successful adaptation despite risk and adversity.
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American psychologist, 56*(3), 227.
- McCubbin, L. (2001). Challenges to the Definition of Resilience.
- McEwen, B. S. (2007). Physiology and neurobiology of stress and adaptation: central role of the brain. *Physiological reviews, 87*(3), 873-904.
-

McEwen, B. S., Bowles, N. P., Gray, J. D., Hill, M. N., Hunter, R. G., Karatsoreos, I. N., & Nasca, C. (2015). Mechanisms of stress in the brain. *Nature neuroscience, 18*(10), 1353.

McEwen, B. S., Gray, J. D., & Nasca, C. (2015). Recognizing resilience: Learning from the effects of stress on the brain. *Neurobiology of stress, 1*, 1-11.

Mills, R. C., & Spittle, E. (2001). *Wisdom within*. Lone Pine Pub..

Myers, D. G., & Diener, E. (1995). Who is happy?. *Psychological science, 6*(1), 10-19.

Nicolaidis, N. C., Kyratzi, E., Lamprokostopoulou, A., Chrousos, G. P., & Charmandari, E. (2015). Stress, the stress system and the role of glucocorticoids. *Neuroimmunomodulation, 22*(1-2), 6-19.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child development, 71*(3), 543-562.

Olsson, C. A., Bond, L., Burns, J. M., Vella-Brodrick, D. A., & Sawyer, S. M. (2003). Adolescent resilience: A concept analysis. *Journal of adolescence, 26*(1), 1-11.

Padgett, D. A., & Glaser, R. (2003). How stress influences the immune response. *Trends in immunology, 24*(8), 444-448.

Ryff, C. D., & Singer, B. (2000). Interpersonal flourishing: A positive health agenda for the new millennium. *Personality and social psychology review, 4*(1), 30-44.

Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. *Jama, 301*(21), 2252-2259.

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International journal of behavioral medicine, 15*(3), 194-200.

Souri, H., & Hasanirad, T. (2011). Relationship between resilience, optimism and psychological well-being in students of medicine. *Procedia-Social and Behavioral Sciences*, 30, 1541-1544.

Towbes, L. C., & Cohen, L. H. (1996). Chronic stress in the lives of college students: Scale development and prospective prediction of distress. *Journal of youth and adolescence*, 25(2), 199-217.

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of personality and social psychology*, 86(2), 320.

Wagnild, G. M., & Young, H. M. (1993). Development and psychometric evaluation of the Resilience Scale. *Journal of nursing measurement*.

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and negative affectivity and their relation to anxiety and depressive disorders. *Journal of abnormal psychology*, 97(3), 346.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063.

Windle, G. (2011). What is resilience? A review and concept analysis. *Reviews in Clinical Gerontology*, 21(2), 152-169.

Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and quality of life outcomes*, 9(1), 8.

Wong, P. T. (2011). Positive psychology 2.0: Towards a balanced interactive model of the good life. *Canadian Psychology/Psychologie Canadienne*, 52(2), 69.

Xu, J., & Roberts, R. E. (2010). The power of positive emotions: It's a matter of life or death—Subjective well-being and longevity over 28 years in a general population. *Health Psychology*, 29(1), 9.

Zeng, G., Hou, H., & Peng, K. (2016). Effect of Growth Mindset on School Engagement and Psychological Well-Being of Chinese Primary and Middle

School Students: The Mediating Role of Resilience. *Frontiers in psychology*, 7, 1873.

Zunhammer, M., Eberle, H., Eichhammer, P., & Busch, V. (2013). Somatic symptoms evoked by exam stress in university students: the role of alexithymia, neuroticism, anxiety and depression. *PloS one*, 8(12), e84911.

6. Declaration of Word Count

Abstract 209

Introduction 2459

Method 693

Results 343

Discussion 1270

Total 4,973

Signed: _____

Date: 20/04/18