



The Relationship between Anxiety, Depression and General, Social and Academic Self-Concepts in Undergraduate Students

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Abstract

The relationship between general, social and academic self-concepts on undergraduates' anxiety and depression scores was investigated. Self-concepts were measured using 5 out of 13 subscales of the SDQIII (Marsh, 1992) and anxiety and depression scores were measured using Zung Self-Rating Scales (Zung 1965; 1971a). A multiple regression demonstrated that four self-concepts (general, academic, same-sex peer relations and parental relations) significantly predicted depression scores and two self-concepts (general and parental relations) significantly predicted anxiety scores. Females experienced significantly higher anxiety and depression scores than males, but there were no significant gender differences for any of the self-concepts measured. There were also no significant differences between students' year of study and anxiety, depression and self-concept scores. A limitation of the current study is that the SDQIII was not used in its entirety and consequently, some elements of students' self-concept that are related to anxiety and depression may have been missed. It is encouraged that future research replicates the current study but uses the whole SDQIII, to achieve a more in-depth understanding of the relationship between undergraduates' self-concepts, anxiety and depression.

Key words:	Anxiety	Depression	Self-Concepts	Undergraduate Students
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Introduction

The transitional period between adolescence and adulthood, as a developmental stage, is referred to as 'emerging adulthood' (Arnett, 2004). It covers the 18 to 25 age group, when many move away from home to university. This time requires the development of skills such as; increased independence, self-sufficiency and emotional stability, and provides new academic and social challenges, for example; living and working with new people, the possibility of developing or maintaining intimate relationships, challenges to identity and increased exposure to alcohol and drugs (Arria *et al.*, 2010). Such factors have been identified as stressful (Mackenzie *et al.*, 2011; Meadows, Brown & Elder, 2006) and associated with anxiety (Blackmore, Tucker & Jones, 2005) and depression (Furr, Westefeld, McConnell & Jenkins, 2001). This provides an explanation as to why students fare worse on measures of psychological well-being than the general population (Roberts & Zelenyanski, 2002).

As a student herself, the researcher was aware of the challenges of the university experience, having seen friends adapt and cope differently. Furthermore, volunteering at a mental health charity (Mind), aspiring to be a Clinical Psychologist and having a flatmate diagnosed with clinical anxiety and depression whilst at university, increased personal interest into the causes of anxiety and depression, particularly causes which can be exacerbated by university.

Indeed, the move from home to university is associated with an increase in reporting of psychiatric symptoms (Callender *et al.*, 2011). Supporting this, Cooke *et al.* (2006) found that first year British students' scores of psychiatric morbidity increased after students began their university studies, with anxiety symptoms being particularly prominent. Furthermore, Eisenberg *et al.* (2007) estimated the prevalence of undergraduates experiencing a depressive or anxiety disorder was 15.6%. Depression may lead to suicide ideation and attempts (Garlow, Rosenberg & Moore, 2008) and, worryingly, suicide is the second-leading cause of death among university students (Schwartz, 2006), accounting for approximately 1,000 student lives lost each year in America alone (American Association of Suicidology, 2006), behind accidents (Haas, Hendin & Mann, 2003).

A further concern is the increasing prevalence of mental health disorders in young individuals in the USA, UK and the Netherlands (Hunt & Eisenberg, 2010). Regarding depression, 15% of American university students were diagnosed with depression in 2006, an increase from 10% in 2000 (American College Health Association, 2008). Supporting this, Sax, Gilmartin and Bryant (2003) demonstrated from a large survey of more than 300,000 university students, that students were more depressed than in the 1980s.

A wealth of research has found that preventing and treating mental health disorders, such as anxiety and depression, improves students' educational, economic, and social outcomes (Andrews, Hejdenberg & Wilding, 2006, Andrews & Wilding, 2004, Kessler *et al.*, 2001). Research into the causes of poor mental health can help to challenge such causes, consequently improving students' chances of educational, economic and social success. As such, the researcher will examine the literature to

find potential predictors of anxiety and depression that are particularly prevalent in or intensified by the university experience.

Therefore, it is hoped the current research will be informative and helpful for a variety of people; students, parents, educators and universities' mental health services. By providing increased understanding of predictors of anxiety and depression, which can be exacerbated by the university experience, these predictors can be challenged, thus reducing students' chances of developing anxiety and depression and consequently, increasing their chances of educational, economic and social success.

Literature Review

A Deeper Exploration into Anxiety and Depression

Mental health disorders are the most common health problems, estimated to affect 450 million people worldwide (World Health Report, 2001). In Britain, mental health problems have been found to affect one in six adults in any one year (Singleton, Bumpstead, O'Brien, Lee & Meltzer, 2001). Other research presents higher figures, for example, citing mental health problems as affecting one quarter of the British population in any given year (Halliwell, Main & Richardson, 2007). Mixed anxiety and depressive disorder is the most prevalent mental health disorder, followed by general anxiety, then depression, phobias and obsessive-compulsive disorder (Singleton *et al.*, 2001).

The British Psychological Society (BPS, ND) and the American Psychological Association (APA) (2013) define depression as a deeper feeling than being miserable or sad. Symptoms of depression are broad, including; a lack of interest and pleasure in previously enjoyed activities sometimes leading to withdrawal of participation, a change in appetite contributing to a significant weight loss or gain, aches and pains, excessive sleeping or insomnia causing a lack of energy or complete fatigue. Other symptoms include difficulty concentrating, feelings of worthlessness, excessive guilt and frequent and recurrent thoughts of death and/or suicide (BPS, ND; APA, 2013; Mind, 2013). A depressive episode is diagnosed if at least two out of three key symptoms; low mood, fatigue or lack of energy and lack of interest or enjoyment in life, are experienced nearly every day for at least two weeks (Halliwell, Main & Richardson, 2007). It is further classified as mild, moderate or severe, depending on the intensity and frequency of associated symptoms (Halliwell, Main & Richardson, 2007).

For the purpose of the current study, the term 'anxiety' will refer to 'Generalised Anxiety Disorder (GAD)'. Symptoms of GAD include physiological factors such as; muscle tension, trembling, increased blood pressure and heart rate, and cognitive factors such as; worry and feelings of apprehension about everyday problems. Furthermore, individuals are anxious in most situations, and there is no particular trigger for anxiety (APA, 2013; House & Stark, 2002). However, anxiety is a normal response to threat or danger and only becomes a mental health problem if the response is exaggerated, lasts longer than three weeks and interferes with daily life (Halliwell, Main and Richardson, 2007).

Anxiety and depression are highly co-morbid (Manassis & Menna, 1999; Last, Hansen & Franco, 1997). In fact, just 2% of the population who experience depression do so without co-morbid anxiety (Singelton *et al.*, 2001). Anxiety and depression are believed to have similar emotional features, which lends a plausible explanation for the high co-morbidity. For example, the World Health Organization (WHO) place both anxiety and depression in the category of 'neurotic disorder' (Rutter, Shaffer & Shepherd, 1975). However, the Diagnostic and Statistical Manual of Mental Disorders classifies anxiety and depression as separate categories (American Psychiatric Association, 1987) and research has found that despite similarities, the key emotion in anxiety is fear, and the key emotion in depression is anguish or distress (Blumberg & Izard, 1986).

Following trends that anxiety and depression are the most common mental health problems in the general population, it is not a surprise that anxiety and depression are also the most common mental health problems affecting young people (Farrell & Barrett, 2007). Although rates of depression are low in childhood, they are comparable to rates found in adults by mid-adolescence (Southall & Roberts, 2002). Research has indicated that as many as 25% of young people are likely to have experienced a clinically significant depressive episode by the time they are 18 years old (National Health and Medical Research Council, 1997). Furthermore, Eisenberg *et al.* (2007) estimated that 15.6% of undergraduates experience a depressive or anxiety disorder. Other studies report even higher percentages, for example, Andrews and Wilding (2004) reported that 20% of undergraduates were troubled with anxiety at a clinically significant level. Stallman (2010) argued that the extremely high prevalence of mental health problems in students is sufficient evidence to identify them as an 'at-risk' population. This leads to the question as to why this is the case.

As mentioned in the Introduction, Meadows, Brown and Elder (2006) identified anxiety-provoking factors that came with the university experience, such as increased independence, self-sufficiency and meeting many new people from a wide range of backgrounds. Attrition rates are a good demonstration of how well students cope with the transition to university. Jackson (2003) estimated attrition rates could be as high as one in four students in the United Kingdom and Pitkethly and Prosser (2001) noted as many as one in three students in Australia fail to graduate. Suggestions for student attrition include 'unhappiness' (Yorke, 2000), 'alienation' (Mann, 2001) and changing pedagogies which Smith and Webster (1997) argue contribute to universities losing the closeness they once had with their students. Scanlon, Rowling and Weber (2007) concluded the construction of appropriate learner identities is difficult for students and that students face 'identity discontinuity' between their identity at home and at university. Supporting this, Mackenzie *et al.* (2011) suggested the challenges associated with students exploring their identity can be particularly stressful. However, commitment to an identity has been linked to fulfilling one's goals and significantly and positively correlated to an individual's self-concept (Johnson & Nozick, 2011). This is interesting in the field of mental health, because a positive self-concept has been found as a protective factor that impedes psychological problems (Gilman & Huebner, 2006).

Examining the role of self-concept as a predictor of mental health problems further, a wealth of research has demonstrated linkages between poor self-concept and mental health disorders. For example, a low self-concept has been linked with

externalising problems, such as aggression (Moretti, Holland, & McKay, 2001), rule-breaking and delinquent behaviour, (Donnellan *et al.*, 2005) and conduct disorders (Maïano *et al.*, 2007). A low self-concept has also been associated with internalising problems, such as post traumatic stress disorder (Saigh *et al.*, 2008) and eating problems (Yager & O'Dea, 2006), such as anorexia nervosa (Jacobi *et al.*, 2004). In all of these studies, low self-concept was found to be a major contributor for the onset and/or persistence of the disorders.

However, despite their prevalence, there is a lack of existing literature which examines self-concept in relation to anxiety and depression. However, Simons *et al.* (2012) examined the relationship between self-concept and psychiatric individuals (many of whom had depression) and found that self-concept scores were significantly lower in the 'clinical' group than the 'non-clinical' group. Therefore, Simons *et al.*'s (2012) research demonstrates a relationship between self-concepts and depression which highlights that it is worthwhile to examine this relationship in more depth and relate it to an undergraduate population, where depression is particularly prevalent. However, as identified, anxiety is also extremely prevalent (and highly co-morbid with depression) in the undergraduate population, and so it also seems worthwhile to examine the relationship between anxiety and self-concepts in undergraduates. To do so, firstly, self-concept needs to be theoretically examined and then related to the university experience.

Theoretical Background and Construct Definition of Self-Concept

Broadly, self-concept is an individual's perceptions of him or herself (Marsh & Shavelson, 1985). Historically, self-concept research emphasised a one-dimensional, global domain of self-concept (Marsh & Martin, 2011). Furthermore, in many studies, researchers developed their own instruments and used inappropriate methodological procedures (Wylie, 1974). Such ambiguity and inconsistency led Shavelson, Hubner and Stanton (1976) to develop the first multidimensional, hierarchical model of self-concept (*Figure 1*), which has undergone rigorous examination (Byrne & Shavelson, 1986) and has been highly influential since its conception. Their model contains seven features critical to the definition of self-concept; multidimensional, developmental, differentiated, organised, hierarchical, stability and evaluative.

Self-concept is multidimensional as individuals collate and categorise the wealth of information they have about themselves in numerous domains. Interestingly, the researchers in Simons *et al.* (2012) study, regarding self-concept and mental health problems, believed that they were the first to use a multidimensional scale of self-concept with participants experiencing mental health problems. Individuals' categories about themselves represent a way of structuring experiences and giving them meaning, consequently, self-concept is organised (Shavelson, Hubner & Stanton, 1976). The multidimensional nature of self-concept increases as an individual moves from infancy to adulthood (Marsh & Shavelson, 1985). This is due to the fact that infants do not differentiate themselves from their environment but, as they mature and learn from experience, they begin to build concepts by categorising situations and experiences, as such, self-concept is developmental. Linked to this, with increasing age and experience, self-concept becomes increasingly differentiated (Shavelson, Hubner & Stanton, 1976).

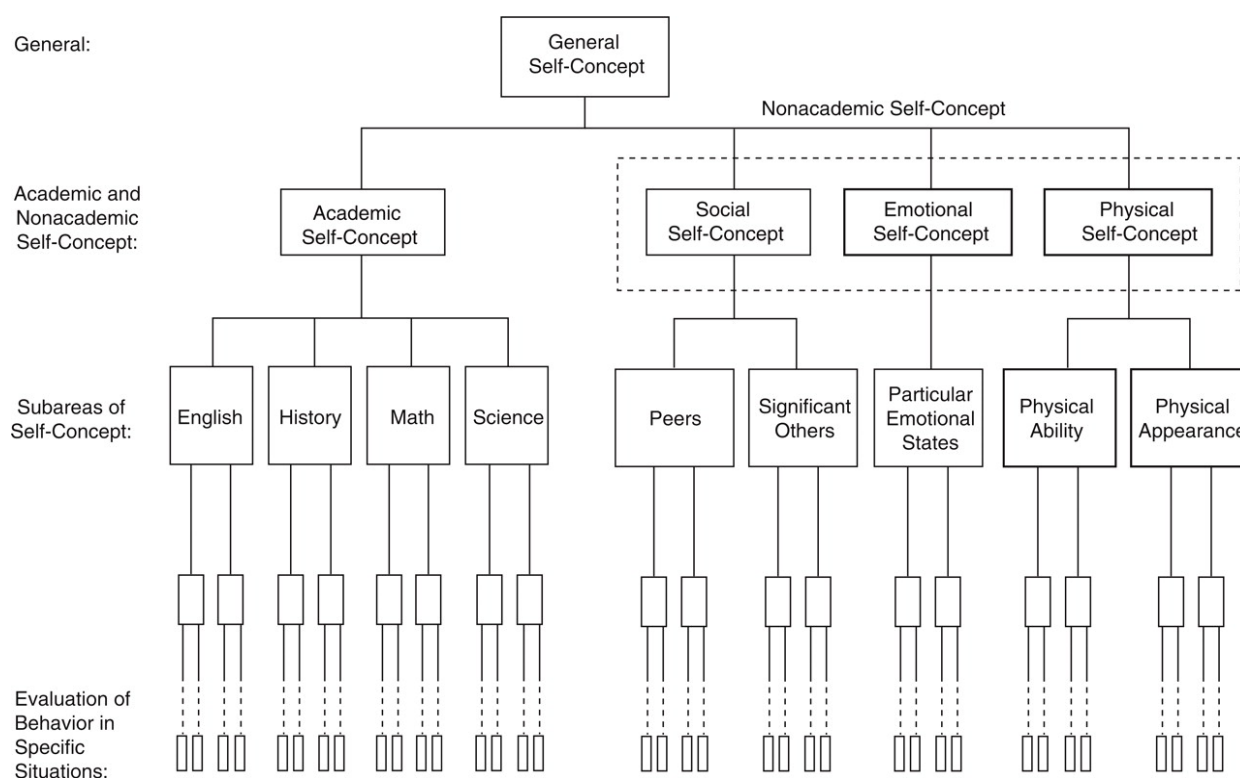


Figure 1: Shavelson, Hubner & Stanton's (1976) Theoretical Model of Self Concept

The hierarchical nature of self-concept refers to how different dimensions of self-concept form a hierarchy, moving from individual experiences in particular settings at the bottom of the hierarchy to general self-concept at the apex of the hierarchy (Shavelson, Hubner & Stanton, 1976). General self-concept is divided into two distinct components; academic and non-academic self-concept. Academic self-concept is divided into subject areas and then into specific areas within a subject matter. Non-academic self-concept is comprised of social, emotional and physical self-concept. All of these divisions are then further divided into individual's evaluations of their behaviour or experiences in specific situations. The hierarchical nature of self-concept links with a further factor: stability. Self-concept is most stable at the apex of the hierarchy and becomes less stable further down in the hierarchy (Shavelson, Hubner & Stanton, 1976). This is because the base of the hierarchy is experiences and behaviours in specific situations, which vary widely. Shavelson, Hubner and Stanton (1976) suggested it requires many situation specific instances that are inconsistent with an individual's general self-concept, for an individual to notice or perceive a change in their overall, general self-concept.

Self-concept is evaluative. Not only do individuals develop a description of themselves in a particular experience or situation, but they evaluate their performance in such experiences or situations. This is where the distinction between self-concept and self-esteem becomes difficult, as Huitt (2011) notes that some authors use self-concept and self-esteem interchangeably. Some have aimed to distinguish the two by noting self-concept as descriptive statements of the self and self-esteem as evaluative aspects of the self, that is; the factual information about the self compared to the degree of positive or negative feelings regarding the self

(Marsh & Martin, 2011). For example, Rogers (1982) defined self-concept and self-esteem as 'what we think we are like and how we like what we think' respectively. However, one of the seven elements of self-concept is 'evaluative' (Shavelson, Hubner and Stanton, 1976), so the distinction between self-concept as descriptive and self-esteem as evaluative is too simplistic. Indeed, Brinthaupt and Erwin (1992) argue that discriminating self-esteem from self-concept is difficult because descriptions of the self often contain an evaluative component, for example, "I am smart" is descriptive, yet it is also an individual's evaluation of their intelligence. Indeed, it is now generally accepted that self-concept is descriptive and evaluative (Byrne, 1996a; Marsh, 2007). This ties to the last feature of self-concept; that it is differentiable from other constructs with which it is theoretically related. Whilst self-concept may share similarities with other self-related constructs, such as self-esteem, they are not one and the same.

Anxiety, Depression and Self-Concepts in Relation to Undergraduates and University

It is now important to examine the relationship between self-concept and the university experience, and why this may contribute towards high anxiety and depression levels in the undergraduate population. Primary factors identified by undergraduates as stressors and depressors are academic challenges and the pressure to succeed (Mackenzie *et al.*, 2011; Meadows, Brown & Elder, 2006; Blackmore, Tucker & Jones, 2005; Furr *et al.*, 2001). Sax, Gilmartin and Bryant (2003) found that 27% of students stated they felt overwhelmed by academic challenges. As such, it seems salient to examine academic self-concept from Shavelson, Hubner and Stanton's (1976) model further, relating it to the university experience, anxiety and depression.

Academic self-concept has been defined as individuals' perceptions of their abilities in academic domains and subjects (Marsh & Craven, 1997; Valentine *et al.*, 2004). Marsh and Hau (2003) note fostering high academic self-concept in individuals is one of the major goals of education. This is because Bandura (1997) and Deci and Ryan (2000), have identified that self-concept plays a key role in motivation and behavioural choices. Indeed, a high academic self-concept has been associated with self-confidence and competence (Marsh & Craven, 1997) which have a positive effect on behavioural outcomes, such as academic effort (Trautwein *et al.*, 2006a). Furthermore, a wealth of research has demonstrated that a high academic self-concept has an effect on important academic outcomes and success (Marsh & Yeung, 1997; Valentine *et al.*, 2004; Trautwein *et al.*, 2006b). Consequently, low academic self-concept is likely to impede academic success and therefore, is plausibly related to student anxiety and/or depression. Indeed, Brackney and Karabenick (1995) found that students with higher levels of psychological distress were characterised with higher test anxiety and lower academic self-efficacy. Consequently, it is important to examine why students' academic self-concept may be weakened and potentially be a contributor towards student anxiety and depression.

Theoretically, Shavelson, Hubner and Stanton's (1976) model demonstrates prior academic achievement as important for the formation of a subsequent academic self-concept. Different theorists disagree as to whether Shavelson, Hubner and

Stanton's (1976) theoretical basis is correct (Calsyn & Kenny, 1977). For example, skills development theorists argue academic self-concept emerges primarily due to academic achievement, supporting Shavelson, Hubner and Stanton's (1976) theory. Opposite to this, self-enhancement theorists suggest academic self-concept is a determinant of academic attainment, refuting the theoretical basis that it is prior achievement that contributes to academic self-concept (Calsyn & Kenny, 1977). Current research has settled with a reciprocal effects model, whereby academic self-concept affects and is affected by academic achievement (Marsh & Craven, 2006; Marsh, 2007).

Furthermore, academic self-conceptions derive from social comparison with others (Markus & Wurf, 1987). Marsh (1986) developed the internal/external frames-of-reference model, where two comparison processes are involved in the formation of academic self-concept. The internal frame-of-reference occurs when students compare their achievement in one subject with their achievement in other subject domains. The external frame-of-reference occurs when students compare their achievement in a subject with other students' achievement in the same subject field, for example, if a student perceives that their science achievement is higher than that of their peers, they will have an increased science self-concept. The internal/external frame-of-reference model highlights it is perceptions of performance, not just performance itself, which influences academic self-concept. It has been demonstrated that students' self-perception of ability is often stronger than their actual ability when predicting subsequent academic achievement (Pajares & Schunk, 2002). Therefore, if undergraduate students perceive their ability to be less than that of their peers, this may cause anxiety and weaken subsequent academic achievement, thus continuing anxiety and/or depression.

Comparison of academic ability with others is particularly likely to occur during the transitional stage of university. Illustrating this, the Big Fish Little Pond Effect (BFLPE) (Marsh, 1987) asserts that students will have higher academic self-concept when placed in a low-achieving group and lower academic self-concept when positioned in a high-achieving group. As such, students who were 'big fishes' in a 'little pond' at college become 'average' or 'small fishes' in a 'big pond' at university. The BFLPE asserts that. Consequently, the transitional period of university is a period of particular threat to individuals' academic self-concept. There is a great deal of similarity between the BFLPE (Marsh, 1987) and the external frame-of-reference (Marsh, 1986). This is because both are applications of social comparison theory (Festinger, 1954), which works on the basis that individuals are driven to gain accurate self-evaluations and do so by comparing themselves to others. However, social comparison processes can cause negative consequences for individuals, such as a reduction in academic self-concept, which may provide an explanation for high student anxiety and depression.

The literature has revealed academic self-concept is largely influenced by self-perceptions, for example, from prior academic achievement and also from social comparisons with peers. Consequently, it seems apt to examine social self-concept in relation to the university experience more deeply, and why this may cause anxiety and/or depression in undergraduate students. Social self-concept has been defined as an individual's perception of his or her social competence with respect to social interaction with others (Markus & Wurf, 1987). Specifically, Shavelson, Hubner and

Stanton's (1976) model notes that social self-concept derives from social competence in two sub-areas; peers and significant others.

Interestingly, a study of 222 undergraduate students found that those who were 'very happy' were highly social (Diener & Seligman, 2002). Further to this, the very happy students had stronger social and romantic relationships than students who were not as happy (Diener & Seligman, 2002). Interestingly, supportive relationships have been identified as a protective factor against the onset or recurrence of depression in early adulthood (Colman *et al.*, 2014). Furthermore, the social support theory (Cohen *et al.* 1985) proposes that social support, such as advice and reassurance, provided by significant others helps adaptation to stressful situations. Therefore, social factors such as supportive and/or romantic relationships may influence the extent to which students feel happy, anxious, stressed or depressed.

Further to this, students face increased exposure to alcohol and drugs at university (Arria *et al.*, 2010). This, combined with the Social Identity Theory of individuals having a desire to identify and belong to an in-group (Tajfel & Turner, 1979; 1986) can cause students to succumb to pressure and engage in heavy drinking. For example, this is particularly well demonstrated with 'lads' at university, many of whom engage in heavy drinking to identify with hegemonic masculinity (Dempster, 2011) and consequently, aid initial peer group formation (Warin & Dempster, 2007) and develop a 'student identity'.

Furthermore, Gallagher, Gill and Sysko (2000) found that mental health problems in students are increasing due to a variety of social factors including; family dysfunction (such as divorce), poor parenting skills and poor interpersonal attachments. Supporting this, deficits in parental bonding have been identified as a predictor for anxiety (Lima *et al.*, 2010, Meites, Ingram & Siegle, 2012). Therefore, weak relationships with significant others, such as parents, are likely to contribute to anxiety and depression. This is interesting in regard to undergraduates because the move away from home requires increased independence and self-sufficiency and if this has a negative effect on parental relations, students' anxiety and depression may increase.

Gender and Year of Study Differences in Self-Concept, Anxiety and Depression

Regarding gender and self-concept, there is a wealth of contradictory research. For example, Kelley and Decker (2009) found that girls tended to have a higher reading self-concept than boys. However, Kearny-Cooke (1999) found that adolescent girls evaluated two aspects of self-concept in a more negative way than boys; their physical and intellectual self-concept. Furthermore, Jackson (2003) noted females displayed a significant decline in academic self-concept over the transition into higher education. Despite this, Marsh, Tracey and Craven (2006) noted that gender differences in self-concept were small and Wylie (1979) concluded that there was no evidence for gender differences in overall self-concept at any age level. Bowker *et al.* (2003) suggested, when gender differences in self-concept are identified, they are minimal due to the multidimensional nature of self-concept. That is, although girls may have lower self-concept in certain dimensions of the self-concept (for example, their intellectual self-concept as Kearny-Cooke (1999) illustrated), they may have

higher self-concept than boys in other aspects of self-concept, and as such, there will always be a small gender difference in overall general self-concept scores.

Considering gender and anxiety and depression, Nolen-Hoeksma (1987; 1990) found that females were approximately twice as likely to be depressed as males. Gender differences in depression are found as early as mid-adolescence, approximately after the age of 15 (Nolen-Hoeksma & Girgus, 1994). As with higher depression rates for females, Lewisohn *et al.* (1998) found a preponderance of female cases of anxiety disorder, consistent with previous research (Burke *et al.*, 1990; Kendler *et al.*, 1992). Furthermore, Hinden *et al.* (1997) found significant gender differences in reports of depressed mood and mixed anxiety and depression.

Considering students' year of study and mental health, Andrews and Wilding (2004) found that 9% of symptom-free students in their first year had developed depression by the time they were in their second year. However, Cooke *et al.* (2006) conducted a study of students in their first year at university and found psychiatric scores increased after students began their studies, with anxiety being particularly prominent. Furthermore, of a third of students who fail to graduate in Australia, 50% drop-out in their first year (Pitkethly & Prosser, 2001). In addition, of the second-year and third-year withdrawals, many were the result of students' experiences of their first year (Tinto, 1995). Such findings suggest that year of study, particularly students' first year, affects individuals' levels of anxiety and depression. This makes sense considering the aforementioned stressful transition to university, with increased academic worries and social changes.

The Present Research Study

In summary, the literature identifies the period of 18 to 25 as 'emerging adulthood' (Arnett, 2004), a time when many experience the transition and must adapt to the new experience of university, which comes with anxiety-provoking and stressful challenges (Mackenzie *et al.*, 2011; Meadows, Brown & Elder, 2006). This period of time is also associated with emerging mental health disorders (Callender, *et al.*, 2011; Cooke *et al.*, 2006; Eisenberg *et al.*, 2007; Kessler *et al.*, 2005; Roberts & Zelenyanski, 2002). The two most common mental health problems experienced by students are anxiety and depression (Blackmore, Tucker & Jones, 2005; Boyd *et al.*, 2000; Farrell & Barrett, 2007; Furr *et al.*, 2001; National Health and Medical Research Council, 1997; Skrove *et al.*, 2013) and research demonstrates the increasing prevalence of both (Hunt & Eisenberg, 2010; Sax, Gilmartin & Bryant, 2003). Research has identified that students experience an "identity crisis" and begin to reflect on themselves (Johnson & Nozick, 2011; Mackenzie *et al.*, 2011), thus a connection exists between the university experience and self-perceptions, such as individuals' self-concept. Interestingly, self-concept has been linked with a range of internalising and externalising mental health problems. There is less research specifically focused on self-concepts in relation to anxiety and depression, thus the review of literature points towards a need for research on this relationship, and it seems salient to explore this in an undergraduate sample.

Furthermore, the review of the literature has highlighted several key points to consider. Firstly, Shavelson, Hubner and Stanton's (1976) model of self-concept stresses the multidimensional nature of self-concept, but much research primarily

focuses on one-dimensional constructs, such as self-esteem (for example, Sukurman, 2003) in relation to anxiety and depression. Therefore, the current research will focus on the multidimensional self-concept in relation to mental health, to identify which dimensions of self-concept are the largest predictors of anxiety and depression, rather than use a one-dimensional construct, such as self-esteem. Secondly, most current research focuses on clinically anxious and depressed individuals, rather than assessing the general anxiety and depression that can exist in an everyday population, such as undergraduates. As such, prior research may have a misrepresentative and/or exaggerated view of the relationship between self-concepts, anxiety and depression.

Overall the background literature has led to the following research questions:

- To what extent do general, social and academic self-concepts predict anxiety and depression for undergraduate students?
- Do gender and year of study affect levels of anxiety, depression and general, social and academic self-concept?
- How strong is the relationship between academic self-concept and predicted academic attainment?

Method

Measurement Instruments

To measure students' self-concept, the present study used the Self-Description Questionnaire III (SDQIII) (Marsh, 1992) due to its strong grounding in Shavelson, Hubner and Stanton's (1976) multidimensional-hierarchical model of self-concept. The SDQIII was based upon two previous editions of the SDQ. The third edition was selected because it was designed specifically for use with a late adolescent population (Marsh & O'Neill, 1984). Consequently, the SDQIII lent itself well to the target population of the current research study of 'emerging adulthood', undergraduate students. Furthermore, the SDQIII differentiates between peers of the same sex and the opposite sex, which becomes increasingly important with age (Marsh, 1989; 1990), whereas prior versions (SDQI and SDQII) do not.

Further to this, the SDQIII has good validity and reliability (Marsh & O'Neill, 1984). High reliability scores were demonstrated for all 13 subscales ($\alpha = 0.89$) and correlations among each factor were low ($r = 0.09$), demonstrating each factor as unique and distinct facets of self-concept (Marsh & O'Neill, 1984). Regarding validity, there is strong support for the construct validity of the SDQIII, for example maths self-concept was highly correlated with maths achievement and uncorrelated with non-academic self-concepts (Marsh & O'Neill, 1984). Furthermore, good concurrent validity has been demonstrated between the SDQIII and other self-concept measurements, such as the Tennessee Self-Concept Scale and Self-Concept of Ability Scale (Byrne, 1996b).

The researcher chose to use five of the thirteen subscales from the SDQIII; General – Self, General – Academic, Peer Relations – Same Sex, Peer Relations – Opposite Sex and Parent Relations. This decision was made for several reasons. Firstly, as identified in the literature review, academic and social challenges seem prevalent for

undergraduate students, thus the researcher believed that same-sex, opposite-sex, parental relations (social) and academic self-concept (academic) subscales would be the most salient for the current research study's population. However, the researcher also decided to measure general self-concept to counter for the fact that other facets of self-concept will not be measured. Secondly, five subscales were measured to reduce the length, and consequently, time it would take for individuals to complete the questionnaire. Even so, 92 individuals started but did not complete the questionnaire and the length of time to complete the questionnaire is a likely contributor for this statistic.

Of the subscales chosen, the 'General – Self' scale is represented by 12 items and the other four subscales are each represented by 10 items. All items are measured on an 8-point Likert scale ranging from; definitely false (1), false (2), mostly false (3), more false than true (4), more true than false (5), mostly true (6), true (7) to definitely true (8). All items were kept the same as the original scale, except for one item on the 'General – Academic' subscale which was changed from "I could never achieve academic honours, even if I worked harder" to "I could never achieve a 1st, even if I worked harder", to be in line with British Higher Education marking. Items were labelled using the SDQIII 'Suggested Structure Variable Names' (Marsh, ND). For every SDQIII subscale, half of the items are negatively worded to reduce positive response bias (Leach *et al.*, 2006). Such items were reversed in accordance with SDQIII 'Variables and Scoring' manual (Marsh, ND). After reversal, all items with a response of definitely agree (8) represented a positive self-concept rating. The sum of scores on each scale was calculated, to give individuals an overall raw score for each measure of self-concept.

Depression was measured using the Zung Self-Rating Depression Scale (ZSDS) (Zung, 1965). This is because the ZSDS has been identified as a valid (Biggs, Wilie & Ziegler, 1978; Thurber, Snow & Honts, 2002) and reliable measure (Gabrys & Peters, 1985) of depression. Furthermore, the ZSDS measures a broader spectrum of symptoms than other instruments, such as the Beck Depression Inventory (Cusin *et al.*, 2010). For example, the ZSDS includes affective, behavioural, cognitive, psychological and somatic aspects of depression. Anxiety was measured using the Zung Self-Rating Anxiety Scale (ZSAS) (Zung, 1971a). The ZSAS measures four manifestations of anxiety; cognitive, autonomic, motor and central nervous system symptoms. Zung scales were also selected on the basis that they were developed to discriminate the measurement of anxiety and depression (Zung, 1971b).

Both the ZSDS and the ZSAS contain 20 items. Participants are asked to select a response which 'best describes how often they felt or behaved during the past several days' on a 4-point Likert scale; most of the time (4), good part of the time (3), some of the time (2) and a little of the time (1). This contributed to the decision to use Zung's scales because participants rate how often they feel symptoms rather than how severe their symptoms are, which was beneficial for the current study's research population, as a non-clinical sample was used. Furthermore, Zung Scales were chosen for ease of use for the participants. This is because there is unity between the two scales, rather than two different scales with differing Likert options.

Ten items on the ZSDS and five items on the ZSAS required reversal. Afterwards, raw scores were calculated for anxiety and depression based on the sum of

individual item scores. For diagnostic purposes, raw scores are converted into an index, for example, Zung Self-Rating Depression Index scores range from 20 to 80, with 20 to 44 representing a normal range, through mildly (45 to 59) and moderately depressed (60 to 69) categories, to 70 to 80 representing a severely depressed score. However, the current research did not require a diagnostic category, consequently individual's raw scores were utilised so that the researcher was working with interval, rather than categorical, data.

Design

The current research study is quantitative in design. A 14 page, 99 item questionnaire was designed using Bristol Online Surveys. A welcome page briefed participants on the nature and purpose of the study and informed consent was gained through an 'I agree' tick box. The second page comprised of six questions. Firstly, there were four biographical information questions; gender, age, year of study and academic institution. Then, the question 'are you an undergraduate student?' was asked, to remove any possible graduate students or non-students from taking the survey. The last question was a chance to leave an email address, as the researcher was considering the idea of follow-up interviews. It was stressed, and marked clearly, that leaving an email address was optional and thirty-two individuals chose to do so.

After these questions, the five aforementioned SDQIII subscales were measured (52 items). The items were positioned in a random order, rather than measuring one subscale at a time. The items were also split into 4 pages of 13 questions, aiding ease of use for the participant. The last part of the survey comprised of the ZSDS and ZSAS items (40 items), which were placed in a random order and administered across 2 pages (20 items on each page), again for ease of use for the participant. Lastly, there was a concluding 'thank you' page. This included the researcher's and supervisor's email addresses, should individuals have wanted more information regarding the nature and/or procedure of the study. The last page did not contain any questions - a requirement of Bristol Online Surveys so that data can be recorded.

Procedure

After the questionnaire was created using Bristol Online Surveys, the researcher asked two individuals to complete the questionnaire to check for mistakes, make recommendations or suggest improvements. Feedback suggested that the researcher included a 'page count', so that participants would know which page of the questionnaire they were on and how many more pages they had to complete. Having made this amendment, the researcher created a uniform resource locator (URL) for the questionnaire and opened the questionnaire on the 1st December 2013. Once the questionnaire was opened, the URL was active and Bristol Online Surveys could collect the results.

The researcher chose to administer the questionnaire using a web-based data collection strategy due to numerous advantages of online surveying. For example, online surveying aids ease of completion by participants (Ahern, 2005) and is able to reach a large population relatively quickly (Betz Hobbs & Farr, 2004; Wright, 2005).

Furthermore, web-based data collection has been found to be popular for the current research population: undergraduate students (McCabe, 2004; Van Selm & Jankowski, 2006).

To administer the questionnaire, the researcher used the social media site 'Facebook'. The researcher posted a status containing the URL link and comment *"I'd really appreciate it if you would complete the survey linked below IF you're from one of the following universities: Lancaster, Cambridge, Durham, Exeter, UEA, Liverpool, Nottingham, Sheffield, Warwick or York. Also, please could you share this status or the URL link with your friends? Thank you!"* (An explanation for the choice of universities is to follow). To increase reach, the researcher contacted college residency officers at Lancaster University, to see if they would email the link to students. One residency officer agreed to do so, and another agreed to share the link, but in a college newsletter rather than email.

On the 22 January 2014, the researcher closed the questionnaire for two reasons. Firstly, the researcher was content with the number of participants reached and secondly, the researcher faced time constraints, with results requiring analysis. Consequently, the questionnaire was open for a total of 53 days. It is important to note that these 53 days capture a brief period of student life, and with much of the time being over the Christmas holidays, the results to follow may be different should this research be repeated again at a different time period, for example, towards the end of the academic year with deadlines and exams. To determine results of the study, statistical analyses were conducted using SPSS statistical software (SPSS, 2008).

Participants

As aforementioned, the questionnaire design included the question 'are you an undergraduate student?' to remove any postgraduate or non-students' responses. Three people responded 'no' and consequently, did not fulfil the research criteria so their data was removed. The researcher considered using university students solely at her academic institution; Lancaster University. However, for statistical analysis, the researcher needed a fairly large sample size and was worried this would not be achieved through Lancaster University alone. Secondly, results from one university would be harder to generalise, as Lancaster University students may be a fairly homogenous group in aspects such as academic self-concept. However, the researcher was concerned that opening the questionnaire to all universities could produce too much variability, with participants coming from too wide an educational background. Therefore, the researcher decided to obtain a sample from ten British Higher Education institutions.

To have some control over educational background, the researcher thought about university entrance criteria and made an effort to select universities with similar academic characteristics as Lancaster. For example, the researcher selected universities which are part of the 'N8 Research Partnership' such as Durham, Sheffield and York, or universities in the '1994 Group' (disbanded in 2013) such as the University of East Anglia. To gain some variability in scores, the researcher used The Guardian University Guide 2014 (The Guardian, 2013) and selected universities on a range from 1st (University of Cambridge) to 54th (University of Liverpool) in the

league table. Furthermore, the universities were also selected on an opportunity basis, as the researcher selected universities where they knew individuals who could complete and pass on the questionnaires, acting as 'gatekeepers'.

Therefore, the current research study's participants were 196 undergraduate students, with 131 female students and 65 male students. Participants were aged between 18 and 23 years, ($M = 20.12$, $SD = 1.06$), capturing an "emerging adulthood" stage of development. Participant numbers from the British Higher Education institutions are as follows; Durham University (10 participants), Lancaster University (94 participants), University of Cambridge (8 participants), University of East Anglia (16 participants), University of Exeter (8 participants), University of Liverpool (14 participants), University of Nottingham (10 participants), University of Sheffield (8 participants), University of Warwick (13 participants) and University of York (15 participants). Regarding academic year, participants are as follows; 1st Year (32 participants), 2nd Year (31 participants), 3rd Year (128 participants) and 4th Year (5 participants).

As such, the researcher realises that the sample of the current research largely reflects the researcher's demographics, a female, 3rd year student at Lancaster University. However, this was likely to occur due to the procedure being used. For example, the researcher utilised their Facebook friends, who are likely to have similar demographics to the researcher. Therefore, the current research used an opportunity sample. However, there was an element of self-selection, as individuals opted to click on the link and complete the questionnaire. Furthermore, some friends of the researcher chose to 'share' the status, so it would appear on their Facebook profiles too, as such, a snowball sample was also used.

Ethical Considerations

The researcher considered potential ethical issues that could arise in the current research and was careful to uphold the British Psychological Society's (BPS) key four ethical principles of respect, competence, responsibility and integrity, using the BPS 'Code of Ethics and Conduct' as a guide (BPS, 2009). Participants were briefed on the nature and procedure of the study on the 'welcome page' of the questionnaire, and all provided informed consent, as such, no deceit was used. However, the researcher decided to use the title "Self-Concepts, Academic Attainment, Feelings and Mood", rather than using the terms "anxiety and depression" so that individuals did not think they could not answer the questionnaire if they were not diagnosed as clinically anxious or depressed.

One ethical issue that could not be promised was the participants' right to withdraw (BPS 1.4 (ii), 2009, p14), because individuals who did not provide their email address could not be identified. As a consequence, the researcher could not find and remove participants' data sets. However, this was clearly stressed during the briefing page of the questionnaire. The ethical consideration of anonymity was also dependent on whether individuals left their email address, but the researcher followed the BPS's 'Standard of Privacy and Confidentiality' to avoid inadvertent disclosure (BPS 1.2, 2009, p10-11).

The largest ethical issue the researcher faced was that two participants answered 'most of the time' and three participants answered 'good part of the time' to the question 'I feel that others would be better off if I were dead'. These participants, as well as other participants who scored highly on the ZSAS and ZSDS, could not be identified. Therefore, the researcher could not provide these participants with their scores and their meaning, or make recommendations, for example, to see a General Practitioner.

Results

The reliability of the scales with the current research population was assessed through Cronbach alphas; Academic Self-Concept ($\alpha = .89$), Same Sex Peers Self-Concept ($\alpha = .87$), Opposite Sex Peers Self-Concept ($\alpha = .91$), Parental Relations Self Concept ($\alpha = .89$) and Zung Self-Rating Anxiety Scale (ZSAS)($\alpha = .83$). General Self-Concept yielded the highest Cronbach's alpha ($\alpha = .93$) and the Zung Self-Rating Depression Scale (ZSDS) yielded the lowest Cronbach's alpha ($\alpha = .82$). Scales are considered reliable when alpha scores are above .7 (Nunnally & Bernstein, 1994) and have further been defined as above .8 as good and above .9 as excellent (George & Mallery, 2003). Therefore, all of the scales used in the current study demonstrated good, if not excellent, reliability with the current population.

Skewness and kurtosis figures revealed that the data was not normally distributed. Across all of the scales, skewness scores were above or below the generally accepted ± 2 ; z-scores were all below -2 for the five SDQIII scales and above 2 on both of the Zung Self-Rating scales. Kurtosis z-scores were all within the accepted ± 2 bracket, except for ZSAS ($z = 2.31$) and Parental Relations self-concept ($z = 4.30$). However, having a large enough ($n = 196$) sample size, with more than 10 observations for each predictor variable (Pallant, 2004), the researcher decided the sample was robust enough to deviate from normality and permit parametric, rather than non-parametric, analysis.

The relationship between scores of depression and scores of anxiety was investigated with Pearson's product-moment correlation coefficient. The two sets of scores correlated strongly and positively, $r(194) = .753$, $p < .001$ (two-tailed), and also demonstrates a large effect size (Cohen, 1988). $r^2 = .567$, and as such 56.7% of the variance in depression scores on the ZSDS is predictable from anxiety scores on the ZSAS.

The data fulfilled the assumptions required to perform a standard multiple regression. Independence of observations (residuals) was checked via a Durbin-Watson statistic for anxiety ($d = 1.854$) and depression ($d = 1.706$), demonstrating the residuals are uncorrelated as the statistic is close to 2. Collinearity was checked through 'tolerance' values, all of the predictor variables demonstrated higher than .2, as such, multicollinearity between variables was not present (Coolican, 2009, p471). Residuals were checked to be normally distributed by use of a normal P-P plot and there was no heteroscedasticity (observed via a scatterplot). Outliers have been described as "extreme cases where the standardised residual is greater 3 than or less than -3" (Coolican, 2009, p471), and in the current data set, outliers were not a cause for concern.

A standard multiple regression was performed between anxiety scores on the ZSAS as the dependent variable and general, academic, same-sex, opposite-sex and parental relations self-concepts as independent variables. Self-Concepts significantly predicted anxiety scores: $F(5,190) = 18.405$, $p < .001$. *Table 1* displays the unstandardised regression coefficients (B) and the standardised regression coefficients (β).

Table 1

A standard multiple regression analysis of the contribution of General, Academic and Social (Same Sex Peers, Opposite Sex Peers and Parental Relations) Self-Concepts to the predict Anxiety Scores on the ZSAS

Model	B	$SE B$	β
General Self-Concept	-.206	.043	-.373*
Academic Self-Concept	.022	.048	-.029
Same Sex Peers Self-Concept	-.103	.055	-1.36
Opposite Peers Self-Concept	-.044	.047	-.069
Parental Relations Self-Concept	-.152	.043	-.218*

$R^2 (.326)$, Adjusted $R^2 (.309)$, * $p \leq .001$

Specifically, two independent variables contributed significantly to the prediction of anxiety scores: General Self-Concept ($\beta = -.373$) and Parental Relations Self-Concept ($\beta = -.218$). Altogether 30.9% of variability in anxiety scores was predicted by knowing scores on all five independent variables. The effect size was large, $f^2 = 0.45$ (Coolican, 2009, p467).

Another standard multiple regression was performed between depression scores on the ZSDS as the dependent variable and general, academic, same-sex, opposite-sex and parental relations self-concepts as the independent variables. Self-Concepts as independent variables significantly predicted depression scores: $F(5,190) = 42.665$, $p < .001$. *Table 2* displays the unstandardised regression coefficients (B) and the standardised regression coefficients (β).

Table 2

A standard multiple regression analysis of the contribution of General, Academic and Social (Same Sex Peers, Opposite Sex Peers and Parental Relations) Self-Concepts to the predict Depression Scores on the ZSDS

Model	B	$SE B$	β
General Self-Concept	-.236	.036	-.431**
Academic Self-Concept	-.088	.039	-.118*
Same Sex Peers Self-Concept	-.129	.046	-.172*
Opposite Peers Self-Concept	-.061	.039	-.097
Parental Relations Self-Concept	-.165	.036	-.240**

$R^2 (.529)$, Adjusted $R^2 (.517)$, ** $p \leq .001$

Specifically, four independent variables contributed significantly to the prediction of depression scores: General Self-Concept ($\beta = -.431$), Academic Self-Concept ($\beta = -.118$), Same Sex Peers Self-Concept ($\beta = -.172$) and Parental Relations Self-Concept ($\beta = -.240$). Altogether 51.7% of variability in depression scores was

predicted by knowing scores on all five independent variables. The effect size was very large, $f^2 = 1.07$ (Coolican, 2009, p467).

Regarding gender, the mean anxiety score for females ($M = 36.46$, $SD = 8.20$) was higher than the mean anxiety score for males ($M = 31.69$, $SD = 6.43$). An independent t-test revealed the difference between means was significant, $t(194) = -4.101$, $p < .001$. Cohen's d demonstrated a moderate effect size ($d = .65$), according to Cohen's (1988) criteria. The mean depression score for females ($M = 39.27$, $SD = 8.24$) was also higher than the mean depression score for males ($M = 36.80$, $SD = 6.86$). An independent t-test revealed the difference between the means was significant $t(194) = -2.088$, $p = .038$, two-tailed. Cohen's d demonstrated a small effect size ($d = .33$), according to Cohen's (1988) criteria. There were no significant differences between females and males scores on any of the five self-concept scales.

Furthermore, a one-way ANOVA demonstrated that there were no significant differences between the year of study (1st, 2nd, 3rd or 4th) and anxiety scores ($F(3,192) = .158$, $p = .924$) or depression scores ($F(3,192) = .071$, $p = .976$). There were also no statistically significant differences between the year of study and scores on any of the five self-concept scales.

Lastly, the relationship between predicted academic attainment and academic self-concept was investigated with Pearson's product-moment correlation coefficient. There was a medium strength, positive correlation $r(194) = .393$, $p < .001$ (two-tailed), with a moderate effect size (Cohen, 1988). $r^2 = .154$, therefore 15.4% of the variance in predicted academic attainment can be explained by individual's academic self-concept score.

Discussion

As noted in the method, Zung scales were the chosen measurement instruments partly on the basis that they were developed to discriminate the measurement of anxiety and depression (Zung, 1971b). However, the first point to consider is that the current research found a strong, significant correlation between depression scores on the ZSDS and anxiety scores on the ZSAS ($r = .753$). This relationship is higher than would be expected on scales which were designed to discriminate between the two mental health disorders. However, such a finding is consistent with the literature; that anxiety and depression are highly co-morbid (Manassis & Menna, 1999; Last, Hansen & Franco, 1997; Singelton *et al.*, 2001). However, a strong correlation between anxiety and depression may mean that the predictor self-concept variables identified for depression may have also contributed to participants' anxiety scores and similarly, the predictor self-concept variables identified for anxiety may also have predicted participants' depression scores.

The background literature led the current study to the primary research question; *to what extent do general, social and academic self-concepts predict anxiety and depression for undergraduate students?* Upon running a multiple regression analysis, the current research found that self-concept scores significantly predicted anxiety scores on the ZSAS, accounting for 30.9% of the variance in anxiety scores. When examining this prediction further, only two of the five self-concept scales

significantly predicted scores on the Zung Self-Rating Anxiety Scale; General Self-Concept and Parental Relations Self-Concept.

The largest predictor of undergraduates' anxiety scores on the ZSAS was general self-concept. This is not surprising as Shavelson, Hubner and Stanton's (1976) hierarchal model conceptualises general self-concept to be at the apex, accounting for all dimensions of individuals' self-concept. A further explanation for general self-concept being the largest predictor of anxiety scores is that the ZSAS is specifically designed to measure general anxiety. As a consequence, it was inevitable that general self-concept was found to be the largest predictor of scores on a general anxiety scale and as such, social and academic self-concepts were less likely to be significant predictors of anxiety on a scale which measured general anxiety levels. In essence, this result has reflected the researcher's choice of scales.

Parental Relations Self-Concept was the other statistically significant predictor variable for undergraduates' anxiety scores, and considers views such as "my values are similar to those of my parents", "my parents understand me" and "my parents have never had much respect for me". The direction of the relationship between Parental Relations Self-Concept and anxiety was negative, meaning that the higher individuals' Parental Relations Self-Concept score, the lower individuals' anxiety scores were. Reflecting upon the literature, prior research demonstrated a link between parental relations and anxiety, for example, parental bonding deficits have been identified to predict anxiety (Lima *et al.*, 2010; Meites, Ingram & Siegle, 2012). Therefore, the current research provides support for the link between parental relations and anxiety. However, unlike previous research noting deficits in parental relations predicting anxiety, the current research demonstrates that positive parental relations reduce students' anxiety. The implication is that it is important for parents and students to maintain positive relations when students move away from home to university, as good parental relations will reduce the chances of students developing anxiety.

Regarding depression, results of the current research found that self-concept scores significantly predicted depression scores on the ZSDS, accounting for 51.7% of the variance in depression scores. Examining this prediction further, four out of the five self-concept scales significantly predicted scores on the Zung Self-Rating Depression Scale; General Self-Concept, Academic Self-Concept, Same-Sex Peers Self-Concept and Parental Relations Self-Concept. As with anxiety, General Self-Concept was the largest predictor of depression scores on the ZSDS, which again can be explained by the fact that ZSDS is a measurement of general depression. Furthermore, General Self-Concept is likely to be the largest predictor of anxiety and depression due to the hierarchal nature of self-concept (Shavelson, Hubner & Stanton, 1976), with General Self-Concept accounting for other dimensions of self-concept which have not been measured in the current research study.

As with anxiety, Parental Relations Self-Concept was the second highest predictor of depression scores. The direction of the relationship was negative, meaning the higher individuals' Parental Relations Self-Concept, the lower their depression scores were. Consequently, it is important undergraduate students and their parents maintain good relationships throughout the university experience, to decrease the chances of not only anxiety but also depression from developing. However, Parental

Relations Self-Concept may be a large and significant predictor of low anxiety and depression due to the fact that Parental Relations Self-Concept scores were positively skewed ($z = -6.59$) and leptokurtic ($z = 4.30$).

Continuing with social self-concepts, it was interesting to find that same-sex, but not opposite-sex peer relations predicted undergraduates' scores on the ZSDS. Questions on the two subscales are similar, for example "I have lots of friends of the opposite sex" and "I have lots of friends of the same sex", with some variations such as "I am comfortable being affectionate with members of the opposite sex" compared with "I share lots of activities with members of the same sex". The previously explored literature does not provide a reason as to why same-sex peer relations predicted depression but opposite-sex peer relations did not, as advice, support and reassurance from both social relationships (largely presumed to be of the same-sex) and romantic relationships (largely presumed from the opposite-sex) were identified as a predictor of happiness and a protective factor against poor mental health in adolescents (Cohen *et al.* 1985; Cornwell, 2003; Diener & Seligman, 2002). Consequently, the difference between same-sex and opposite-sex peer relations on depression provides an interesting avenue for further research.

The researcher realises that a strong emphasis was placed on the multidimensional nature of self-concept after reviewing Shavelson, Hubner and Stanton's (1976) model, but by selecting only parts of the SDQIII (which seemed most salient to the university population after reviewing the literature), failed to provide a multidimensional view of self-concepts in relation to anxiety and depression. Therefore, it is probable that the current research study has missed other facets of self-concept (for example, emotional stability) that also predict anxiety and depression in undergraduate students and consequently, cannot provide a more in-depth picture and analysis on the relationship between self-concepts and anxiety and depression in undergraduates, beyond the five self-concepts examined. This is the current studies' greatest limitation, yet future research's greatest potential.

A further research question was; *do gender and year of study affect levels of anxiety, depression and general, social and academic self-concept?* Females produced higher scores than males for both anxiety and depression. This is consistent with previous research (Nolen-Hoeksma, 1987; 1990; Nolen-Hoeksma & Girgus, 1994; Lewisohn *et al.*, 1998; Burke *et al.*, 1990; Kendler *et al.*, 1992) and provides two hypotheses. Firstly, females are more likely to suffer from anxiety and depression than males and secondly, females are more likely to report feelings and symptoms of anxiety and depression. If the second hypothesis is the case, self-report measures, as used in the current study, may not be ideal for studying mental health problems such as anxiety and depression because results will always demonstrate females to have higher anxiety and depression scores. As such, data in previous research studies which use self-report methods and in the current research study may not yield valid results because true reports of anxiety and depression may not be captured in male populations.

Regarding self-concept, there were no significant differences between males and females levels of self-concept on any of the five self-concept scales measured. This does not support previous literature which has demonstrated gender differences in some dimensions of self-concept, for example, academic (Kearny-Cooke, 1999) and

reading self-concept (Kelley & Decker, 2009). However, the current research supports the assertion that gender differences in general self-concept are not significant due to the multidimensional nature of self-concept (Bowker *et al.*, 2003). That is, possible gender differences further down in the self-concept hierarchy (specific situations and experiences) are evened out at the apex. Indeed, Shavelson, Hubner and Stanton (1976) suggested it requires many situation specific experiences to be inconsistent with an individual's general self-concept, for an individual to perceive a change to their general self-concept.

Having said this, a plausible explanation for the similar levels of self-concept between males and females in the current study is that, despite gender, the sample is a fairly homogenous group. For example, participants are of similar ages and studying a Bachelor's level degree at good British universities. Therefore, the non-significant difference between males and females regarding academic self-concept could be explained due to the fact that females must be high academic achievers to study at degree level (and are consequently, likely to have a high academic self-concept due to the moderate relationship identified between academic self-concept and academic attainment). However, Jackson's (2003) research does not support this claim, finding that females display a decreased academic self-concept after the university transition.

Previous literature demonstrated that the transition from home to university is associated with an increase in reporting of psychiatric symptoms, particularly in students' first year (Callender *et al.*, 2011; Cooke *et al.*, 2006; Pitkethly & Prosser, 2001). However, the current literature did not find any relationship between students' year of study and scores of anxiety and depression and therefore, does not provide support for the year of study being a contributory factor or predictor towards anxiety and depression in undergraduate students. However, the lack of significant difference could be due to the fact that the sample was not evenly distributed between year groups, with far fewer first and second years than students in their final year of studies (third and fourth year students). Therefore, a future direction would be to replicate the current research but with a more even distribution of students in each year of study to determine whether the same results are gained or whether significant differences are found, as previous research would suggest. It is important to do so, because if there are significant year of study differences, interventions and implementations to reduce anxiety and depression can be targeted to specific year groups. For example, it could focus on providing additional support in the first year of university.

The third and final research question was: *How strong is the relationship between academic self-concept and predicted academic attainment?* A Pearson's product-moment correlation coefficient revealed a medium strength correlation between predicted academic attainment and academic self-concept. Therefore, a higher academic self-concept was related to higher predicted academic attainment. In fact, academic self-concept explained 15.4% of the variance in predicted degree grade. This supports the view of self-enhancement theorists, that is: self-concept is a determinant of academic attainment. However, because the current research can only explain 15.4% of the variance in predicted academic attainment, other factors must contribute towards predicted degree grade. One of which could be prior academic attainment, as Shavelson, Hubner and Stanton's (1976) view and skills

development theorists suggest. Therefore, this research study supports the current view of a reciprocal effects model, whereby academic self-concept affects and is affected by academic achievement (Marsh & Craven, 2006; Marsh, 2007).

A further limitation that must be considered is that thirty-two participants were not anonymous which may have affected the validity of their responses and threatens the validity of this research study. Having said this, the majority of participants were anonymous and therefore, the researcher doubts there were any serious drawbacks to the validity of the research and the results of the current study still make significant contributions to the knowledge on the relationship between self-concepts and anxiety and depression. To increase the reliability of the current research, the study could be repeated. However, if the current study is replicated, it is recommended that future researchers should only ask for email addresses if they will definitely use them and if so, that email addresses should be requested at the end of the questionnaire rather than the beginning. Whilst this is mainly to increase validity, it is also for ethical reasons. For example, after participants have answered the questions they may not wish to leave their email address, but in the current research, participants could not go back and withdraw their contact information.

Finally, quantitative research has allowed the researcher to gauge the relationships between self-concepts and anxiety and depression in an undergraduate sample. Therefore, whilst the current study is not limited by the use of quantitative research, further research could also entertain the possibility of qualitative research to understand meaning behind the relationships the current research has discovered.

Conclusion

The current research study aimed to help undergraduate students, parents, educators and student mental health services to understand predictors of anxiety and depression that can stem from or be exacerbated by the university experience. After exploring the current literature, a plausible link between self-concepts and anxiety and depression was identified. Upon examining Shavelson, Hubner and Stanton's (1976) multidimensional and hierarchical model of self-concept, the researcher then examined which dimensions of self-concept seem particularly salient to the university population and settled upon academic self-concept and social self-concepts; parental relations, same-sex and opposite-sex peer relations.

From the literature a main research question arose: *To what extent do general, social and academic self-concepts predict anxiety and depression for undergraduate students?* It was found that general self-concept was the largest predictor variable, followed by parental relations, for both anxiety and depression. Academic self-concept and same-sex peer relations were also identified as predictor variables for depression. Opposite-sex peer relations were not identified as a predictor for either anxiety or depression.

A further research question was: *Do gender and year of study affect levels of anxiety, depression and general, social and academic self-concept?* It was found that, consistent with prior research, gender does affect levels of anxiety and depression, because females demonstrate significantly higher scores for both. However, contradictory to prior research, gender bears no effect on general, social

and academic self-concepts. Furthermore, the year of study was also not found to have any effect on anxiety, depression and self-concepts.

Finally, the current research examined the question: *How strong is the relationship between academic self-concept and predicted academic attainment?* A medium strength relationship was found between these two variables, suggesting academic self-concept explains some variance in predicted academic attainment, but other factors in education must also be taken into consideration, for example, quality of teaching and students' motivation and effort.

In conclusion, the current research achieved its aim in finding predictors of anxiety and depression that may be exacerbated by the university experience; individuals' general, academic, parental relations and same-sex peer relations self-concepts. However, further research should be conducted using the entirety of the SDQIII to examine this relationship in further depth and identify all factors of self-concept which can predict anxiety and depression in undergraduate students. Future research which does so, should also attempt to gather a more even distribution of students regarding year of study, to gain a better understanding of whether year of study has an effect on student anxiety and depression and if so, the implications of this for university support services. Future research may also wish to consider qualitative methods and use measures of anxiety and depression other than self-report measures, to assess whether females still produce higher scores on both anxiety and depression scales. Lastly, if the current research is repeated with the option for participants to leave an email address, this should be placed at the end of the questionnaire to ensure the study has the greatest validity.

Overall, the current research study has demonstrated a relationship between self-concepts and depression and anxiety in undergraduate students and has paved the way for further research in this area. This will ultimately lead to an in-depth picture of relationships between self-concepts and undergraduate mental health and will consequently aid positive mental health for students and ensure their educational, economic and social success.

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