Should I Stay Or Should I Go?:
The Effects of Student Individual Differences On Stress And Estimated Gains From The University Experience.

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Author's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University.

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Abstract

The aim of this thesis was to identify factors at the commencement of university study that may enable prediction of both estimate of gains and experience of stresses. This was done in order to provide information that may enable early identification of risk factors in respect to student attrition. To this end, the thesis examined individual differences amongst students that relate to perception of both estimated gains and stress early in the university experience. Initially, the individual differences studied were those relating to student demographics of age, gender, whether the student performed additional part-time work and the number of hours of work performed and the influence of finances. This first round of testing was performed by distributing questionnaires examining the aforementioned via student welcome packs at commencement of university study. The results of this first round of testing suggested particular importance of intrinsic values on estimated gains. In addition to some influence of finances, gender and hours of work. From open questions present in this first round of testing, focus group questions were formulated in order to further develop the questionnaire. From the findings of study two, this was then expanded to include the influence of perceived demands, control and support and locus of control on estimated gains and subjective perceived stress. This was again performed by distributing a questionnaire at inception, albeit personally to help response rate and answer any queries. This third round of testing, as implied by the focus group responses, found an additional influence of locus of control and the perception of demands, control and support on estimated gains and stress. Finally, the fourth round of testing included biological indicators of stress, namely salivary cortisol levels through the use of analysis of levels of

salivary cortisol, collected using a salivette. This final study suggested a difference in the effects of perceived demands, control and support on both perceived and biological responses to stress The study in all found that there is a definite prediction of estimate of gains from the university environment by the work values studied. Although it was found that gains were primarily influenced by intrinsic values (achievement, advancement, autonomy, personal development), an influence of extrinsic values (economics, prestige, social interaction) was also evident. In addition to work values, demographics of gender, age and hours of work were also found to influence differences in estimated gains and stress. None of the values studied were found to predict perceived stress, however the distinction between perceived and objective biological measures of stress was highlighted. In particular, with regard to the perception of demands, control and support from the university environment. The results of the study also suggested that the extent to which students perceive demands, control and support from the university environment may also have an impact on the student experience of stress, particularly biological stress, which can result in potential harm to physical well-being.

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Contents

Chapter 1: An Overview of the Factors Contributing to University Student Stress and Attrition.

1.1 Rationale

Since the introduction of university fees in 1998, considerable research has been devoted to student difficulties resulting from financial problems. The general consensus has been that financial circumstances have a major impact on both the academic and social experience of higher education, termed the `Student Experience`. The issue of student finance is of particular concern as Prime Minister Tony Blair set a target, to increase the level of participation in university education from 33% to 50% by the year 2010. However, no funds have, as yet been issued to support this target and hence it is possible that government financial support for students will diminish. This fact was highlighted by Lord Baker (2001), stating that in 1989, spending on universities was 0.8% of the GDP of the United Kingdom. By 1997, this had fallen to 0.7% and now stands at 0.6%. In comparison, France and Germany both spend 1% and America 1.1% of their GDP`s on universities. As a result this has changed the focus of university education to one in which the `student experience` encompasses not only the academic and social experience of university, but also the financial pressures which accompany entry into the university environment.

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There have been a number of well established theories over the years to explain the effect of the university environment on the student and resultant attrition. The main theories put forward, of relevance to this study, are Astin's (1970) theory of involvement and Tinto's (1975, 1987) theory of student departure. In order to gain an overall perspective of the effects of the student experience on the individual, it is useful to firstly look at these theories.

1.2 Astin's Theory of Involvement

Astin (1970) proposed one of the first models regarding the impact the university environment has on the student, termed the 'input-process-output' model. This has been put forward more recently (for example, Astin 1985) as a theory in which the purpose of the student at university is one of 'talent development', leading to the theory of involvement. Simply put, Astin (1985) suggested that students develop over their time at university by 'becoming involved'. Astin (1985) saw development as due to five postulates: 1) Involvement requires the investment of psychological and physical energy in tasks, people or activities, be this general or specific. 2) This involvement is a continuous concept, with different students investing varying amounts of energy in different tasks, people or activities. 3) Involvement is both quantitative and qualitative, therefore not simply due to the amount of involvement, but also the quality of involvement. 4) The amount of learning is directly proportional to the quantity and quality of involvement. 5)

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Educational effectiveness of any university policy or practice is related to its capacity to induce student involvement.

Astin's (1985) theory can be seen as one whereby the outcomes are due in very little amounts to the students and greatly to the institution, seeing the students as the raw materials used by the university in the production process. This suggests a rather passive role on the part of the student. However, a more explicit model regarding the impact of the institution specifically on student attrition was put forward by Tinto (1975, 1987).

1.3 Tinto's Theory of Student Departure

Tinto's (1975, 1987) theory suggests that students enter university with varying personal, family and academic characteristics and skills. These include initial dispositions and attitudes toward the institution and personal goals. It is through interaction over time, that students modify their intentions and commitments, with positive interactions leading to greater integration and development and therefore lower attrition. In this theory, the term 'integration' refers to how well the student shares the institutional attitudes and values. Conversely, negative interactions are seen as reducing integration, distancing the individual from the academic and social networks of the institution, ultimately leading to withdrawal. Therefore, Tinto's (1975, 1987) model can be seen to be similar to Astin's (1985) model in that they both focus on 'involvement' within the institution.

1.4 Current Applied Research Findings

The changing demands on students entering the modern university environment were recently summarised by Astin (1998), who suggested a change in student values from 'developing a meaningful philosophy of life' to 'being well-off financially', since the 1960's. These views of students reflect the current situation in Higher education. The present situation was studied in greater depth by UNITE's 2002 Student Living Report, (MORI, 2002) which provides a regular and comprehensive measure of the motivations, expectations, experiences, finances and plans for the future of current higher education students. The results of the UNITE report found that the factors classed as the worst aspects of university life by undergraduate students are those related to having very little money (51%), debt (45%) and having to juggle university work with other commitments (34%). Also, while the factor of having little money is still seen as the worst aspect of university life, the prospect of being in debt has risen in importance significantly by 5% since the previous year. In addition, the greatest change in opinion regarding being in debt as one of the worst aspects of university life over this time has occurred in the higher social classes and those entering university from private education, with a rise of 8% for both groups with relation to the issue of student debt. However, in reality, the disparity of hardship between middle class and working class students has increased in the last year. On average, the amount owed by working class students during their course of study has risen by £1,483 to £4,640 with middle class student debt rising by £440 to £3,621 at the end of

their first year. In addition, the introduction of tuition fees and increasing amounts of student loans has resulted in a considerable increase in the amount students anticipate owing at the end of their course of study. With working class students predicting the greatest increase, now expecting to owe an average of £9,376. In reality, almost a fifth of third year students owe over £10,000 in the form of a government student loan.

As a result of this increasing debt, the number of students working part-time during university term time has increased by 13% in the last twelve months, due to the increased need for students to supplement their incomes. In total, almost three quarters of students report working in some form while at university, compared with around half last year.

Examples such as those cited above could be seen as providing grounds for grave concern over the well-being of the student population. In terms of psychological studies on the effects of this increasing debt, the few existing studies suggest a clear influence of finances on student stress and resultant attrition. For example, finances were rated as the most significant cause of stress among Irish first year undergraduates (44%), (Tyrell, 1992). In addition, a study conducted by Dunkel-Schetter and Lobel (1990) on U.S. undergraduates found that 40% of all students reported financial pressures to be overwhelming. In addition to this, Hodgson and Simoni (1991) found a relationship between financial difficulties among students, poor psychological functioning, poor academic performance and depression.

More recently, Dabney (1995) found finances to be a significant stressor over the course of a questionnaire and diary study, reporting that 70% of participants had stated problems such as not being able to afford to buy a book or piece of equipment recommended for their course and 61% had gone without food due to lack of money. Moreover, subjects had experienced increased stress when expected finances did not emerge on time, when there were unexpected costs, which were not budgeted for and when it was necessary to borrow money.

Additionally, since the inception of tuition fees and removal of grants, there has been an increase in attention regarding the effects of financial hardship on undergraduate students. This has resulted in an increase of in-depth studies on U.K. student well-being. An example of this was a study conducted by Taylor, Smith and Cooper (1999). This study examined the effects of hardship, debt, stress and part-time work on students in three Glasgow institutions, namely Stirling, Strathclyde and Glasgow Caledonian. This study took the form of a postal questionnaire distributed to all of the third year students. The questionnaire contained both quantitative and qualitative questions, in addition to focus group discussions and interviews with staff and students. The results of this study reported that approximately two thirds of students were in part time work, with many working hours equivalent to a full time job. The main reason for students working was found to be financial necessity. The main employment of students was in low paid supermarket, shop and fast-food restaurant jobs. Students worked most frequently at weekends and worked an average of fourteen hours a

week. However, it was found that 20% of students worked over 20 hours and 5% worked over 30 hours a week. As a result of this, the majority of the students indicated that the heavy workload led to stress and as a result, had a negative affect on their studies and grades. In addition, around half had missed lectures as a result of work commitments and 2% - 4% had missed exams due to work commitments due to one in five employers refusing to give time off work for exams, causing conflict between the students and employers.

Another such study was conducted by Roberts, Golding and Towell (1998) on London University students. The aim of this study was to investigate the relationships between students' economic circumstances, their health behaviours, lifestyle and mental and physical health. The rationale given for this study was that there is a strong body of evidence indicating that there is a link between personal financial difficulties and resultant stress and mental and physical ill health. This study aimed to investigate if these links were direct, arising from poor nutrition and bad housing, or indirect, arising from the social implications of having little money. The latter could result in poorer physical health due to the lack of suitable opportunities for physical exercise, reduced levels of social support and low mood due to a lack of money to socialise. In addition to this, it was also suggested that those with a lower income may be forced (by their financial position) to live in a deprived neighbourhood, resulting in greater psychosocial stress. The results of this study were that 41% of the student participants were in debt to an average amount of £3000, 85% of the sample worked an average of

12 hours a week in addition to studying and 70% of the sample were experiencing difficulty in meeting living costs. One group for whom debt was a particular problem were mature students with children. In addition, Roberts et al (1998), found the level of financial difficulty to be related to poor mental health (indicated by General Health Questionnaire scores) and poor academic performance. Also, it was found that students who had considered abandoning their course of study due to financial hardship had significantly poorer mental health, poorer perceived general health, lower vitality and poorer social functioning. Given the large effects of finances on mental health observed in the study, it was also concluded that large numbers of students may be at risk in respect to well-being at university. An additional finding from this particular study was the lack of relationship between self-esteem and financial problems. The reasoning behind this particular finding was that it could be explained on the premise that students attribute the source of their financial difficulties to an external cause of inadequate state funding provision for students rather than to internal attributions of their own ability to manage their finances. However, strong relationships were found to exist for the factors of worsening mental health and vitality, increasing impact of emotional problems on social functioning and role limitations and deepening financial hardship among the first and second year undergraduate sample.

In addition to these findings, research has also suggested that the stress of financial difficulties, are compounded by the uncertainty of future prospects. Stansfield (1998) stated that, in addition to financial hardship and working

during university study, it is these uncertain and inadequate future prospects, which cause both physical and mental strain. This would appear to suggest an influence of what the individual student believes they will gain from their time at university and how this will be utilised after the course of study, as he states that the psychological burden of debt is exacerbated by uncertainty about how to repay the money in the future.

Of particular interest in the Roberts et al (1998) study were the suggestions made regarding the implications of financial hardship on the physical health of the children of students. It was found that, of the 14 members of the sample who had children, 11 reported difficulty in paying bills and 6 reported being in debt, resulting in economic hardship for both the students and their offspring. As there is a great deal of research which suggests a link between poor childhood socio-economic conditions and future morbidity, it is suggested that there are likely to be effects of financial hardship on the health of future generations. This is quite a serious consideration due to the fact that over 2.4 million people are at present in further and higher education.

A further study into student mental health which supports the aforementioned viewpoint, was conducted by Monk and Mahmood (1999). This study used questionnaires and interviews in order to investigate student stress, among students at Glasgow universities. In this study, four groups of students were examined, these being male, female, traditional

entry and mature. The results of this study concurred with those of Roberts et al, once again finding that students are under a high level of financial pressure. It was also suggested that the advent of student loans, coupled with the removal of vacation hardship allowances and lack of entitlement to social security benefits has worsened the situation. The results showed that financial hardship was a recurring problem in all four of the groups studied. In particular, mature males were found to suffer to the greatest extent, this being mainly attributed to family responsibilities. However, Monk et al (1999) state that financial considerations were not the major cause of stress among the sample studied. It was found that, in interviews, finances were mentioned less frequently than both coursework and general emotional state. In addition, unlike the Roberts et al (1998) study, no relationship was found between finances and emotional problems. From this study, Millings Monk concluded that finance makes an important contribution to student stress levels when added to a poor academic background, but does not feel it to be the decisive factor in determining the main causes of student stress.

Following this study, a wider investigation was conducted by Roberts, Golding, Towel, Reid, Woodford, Vetere and Weinreb (2000), analysing questionnaires from a sample of 482 predominantly undergraduate students from two London universities. From these questionnaires they found that 43% of the sample were in debt, with this debt increasing over years of study, with an average debt of £3,403. Of the sample, 72% were experiencing difficulties paying bills and 47% were working in addition to studying, an average of 18.73 hours per week. It was found from this

sample that the participants had generally lower health levels than the population norms when matched with age and gender (using the General health Questionnaire). In addition, a relationship was also found between poorer mental health, longer working hours outside university and difficulty experienced meeting living costs. Also, just under 10% of the sample who had considered leaving university due to finances, were found to have poorer mental health, poorer social functioning and decreased vitality and physical health. Another interesting finding from this study, was the link between financial difficulty and illegal behaviours. It was found that those students experiencing debt were more likely to know individuals involved in prostitution, drug dealing or crime to help support themselves financially. It was concluded from these findings that there was a significant effect of financial difficulty on the health of those students studied.

In examining the effects of poorer financial conditions on the mental health of students, the question arises as to whether it is the financial difficulties which cause the poorer mental health, or is the cause of the financial difficulties due to poorer mental health? However, where longer working hours are associated with poorer mental health, it is difficult to see any obvious reasons why those with poorer mental health would work longer hours. In addition, as Roberts et al (1998) point out, it can be argued that in today's modern competitive market such as that in which we live, those with poorer mental health are much more likely to be denied the chance to work.

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In addition, a further study conducted by Barker (2001) on student finances and paid work supported the findings of the majority of earlier studies. The study used questionnaires containing the General Well-being Questionnaire and the perceived Stress scale to examine 173 undergraduate students at Cheltenham and Gloucester College of Higher education (now the University of Gloucestershire) and discussion groups relating to student finance, paid work and the influence of these on well-being and academic study. The results of this study concurred with those of the earlier studies on student finances and well-being. In addition, contrary to studies such as the Monk (1999) study, debt, financial problems and paid work were the major problems faced by students, considered to adversely affect academic progress and well-being. It was suggested from this study that, due to the measures used, financial problems have a `very real` impact on stress, well-being, attendance and considerations of drop out from university. The study also suggested that undergraduate students in the first year of academic study have not accumulated debts to the same degree as those in later years and as a result, have not experienced financial problems to the same degree as those in other years. The study found that students in the second and third years of university are more likely to be undertaking paid work and experiencing higher levels of debt than those in the first year of study. The results of this study further attest to the value of using a longitudinal measure in order to examine the progression of financial hardship among the student population, from the relatively lower levels of hardship at commencement of university study, through the steady increase over progressive years and the relative effects this has on each student.

1.5 Methods of Testing Student Stress

However, one point of relevance is that, in recent years, student stress has become of major interest in the field of psychology, yet has relied predominantly on self-report questionnaires. Although this has provided a useful perspective on the causes and consequences of student stress, it is by no means conclusive. Humphrey et al (1998), in a study at Newcastle University, exploring both the physical and mental health of students at the aforementioned institution, developed a 36-point scale from the 12-item General Health Questionnaire. From this, a number of factors were found to be associated with stress, allowing the construction of a multi-variate model of student stress. This model explained 25 per cent of the stress experienced whilst at university and although a very satisfactory result, leads one to believe that there is still more to learn in this area, beyond the use of self-report questionnaires.

One such alternative measure of stress is the measurement of salivary cortisol. The measurement of circulating or excreted corticosteroids allows a representation of what affects adrenocorticol activity, responsible for eliciting many changes in neurochemical and metabolic processes. Corticosteroids are secreted during and after exposure to some stressors, as part of the systematic arousal of the hypothalamic-pituitary-adrenocortical axis, initiated by release of corticotropic releasing hormone (CRH) by the hypothalamus. CRH stimulates the pituitary to produce adrenocorticotropic hormone (ACTH), which in turn elicits corticosteroid release from the adrenals. Stress

increases this production and larger quantities of primarily glucocorticoids are released in bursts. This one view has been expanded over the years to suggest how this may reflect specific emotional responses to situations, rather than simply as a measure of arousal, (Hennessy and Levine, 1979; Mason, 1975; Sgoifo, 2003).

The development of reliable measurements of salivary cortisol is a relatively recent development in the study of cortisol. The advantages of this are that cortisol samples can be collected with greater ease and without causing the additional stress caused by such methods as taking blood samples and do not require medical staff for data collection. It also offers the advantage of a more time-defined and acute assessment than urinatory cortisol. The use of saliva-based cortisol measures offers researchers the opportunity to assess this 'stress hormone' without the reactivity, practical restraints and ethical problems inherent in more invasive blood or urine sampling procedures, (Kirschbaum and Hellhammer, 1989). One problem associated with the measurement of salivary cortisol is that stress causes a reduction in salivary flow rate, which can alter the concentrations of substances found in saliva. However, due to the high lipid solubility of cortisol, it can diffuse easily through cell membranes and into saliva, resulting in saliva flow having little or no effect on cortisol levels present in saliva (Vining and McGinley, 1984). In addition, correlations between salivary cortisol and previous measures of blood cortisol frequently exceed .9, showing they are accurate reflections of each other, (Kirschbaum and Hellhammer, 1989).

In addition to the above, studies have shown a rapid transfer of cortisol from blood to saliva. For example, in one study, salivary cortisol levels increased within one minute, after 5-milligram injections of cortisol, (Walker et al 1984). In addition, the rate of disappearance of salivary cortisol reflects that found in blood samples. However, absolute levels have been found to be around half as much in saliva samples, as in blood samples, (Kirschbaum and Hellhammer, 1989) and hence must be interpreted with caution. Nonetheless, the measurement of salivary cortisol would seem to offer a means of assessing student stress that has yet to be fully explored.

It is at this point that we return to the earlier issue regarding the usefulness of questionnaire data. One point in particular to note is that large individual differences to a particular stressor, can best be explained in terms of cognitive mechanisms, in particular, the perception of the situation and its resultant effects on cortisol levels (in this case), as a reflection of the stress experienced *subjectively*. Therefore, the logical method of investigation, in order to explore these subjective responses would be self-report methods, in particular, those that examine how specific or collective situations are assessed as stressful to a person and to what degree.

One of the only empirically established general questionnaires is the 'Perceived Stress Scale' (Cohen et al, 1983), based on Lazarus' concept of stress appraisal, (Lazarus, 1966), the aim of this being to tap the extent to which an individual finds their lives unpredictable, uncontrollable and

overloading. Therefore, if the two approaches to stress measurement (biological and subjective) are combined, it allows the investigation of not only how the person feels they are overwhelmed by a situation, but also the physical response they have to it.

It is in this translation of the situation, from the psychological to the physical, which has received very little attention in research, particularly when examining the extent to which personal control is a factor. One such study, was conducted by Bollini et al (2003) to examine the influence of perceived control on the biological and subjective stress responses and the potential moderating effects of locus of control on this relationship. The results of this investigation suggested that locus of control acted as a moderator between stress and cortisol, with those having more of an internal locus of control perceiving themselves to have greater control over the stressor, showed a reduced cortisol response in the perceived control condition.

Therefore, it would appear that perception of control can have a significant effect on the stress the student experiences. One theory, which develops this idea in the field of student stress comes not from an educational psychology perspective, but from an occupational psychology one. Cotton et al (2002), suggested that principles of job stress theory could be used in a University environment as a means of improving the working environment in order to reduce stress experienced, increase satisfaction and ultimately improve performance. This approach rests on the Demand – Control –

Support (DCS) model, designed by Karasek & Theorell, (1990). This theory postulates that there are three main characteristics of work which can be seen as central in predicting worker health, productivity and satisfaction / motivation. These three main characteristics can be classified as job demand, control and social support (Karasek, 1998). Job demands can be thought of as deadlines to be met, task co-ordination and cognitive effort. Control includes the degree of decision latitude or autonomy the individual has as a part of their job (Karasek, 1998) and support can be suggested to be the sum of the support received, in terms of social interaction and support from both peers and superiors, and the availability of help with tasks when needed.

According to DCS theory, a work environment which combines high demands with low control and / or low support has been found to result in the highest risk of cardiovascular problems (Theorell & Karasek, 1996). Karasek (1998), suggested that job control and social support can be seen as moderators of the effects of work demands on employee well-being, satisfaction and resultant performance, with the most productive environment being one with high demands and high control. Cotton et al, (2002), postulated that, if this demand – control relationship were the case, then students would benefit from flexibly delivered, self-paced programs, resulting in far more `active learning` and personal growth whilst at university.

1.6 Student Estimate of Gains

Therefore, it would appear that the above theory suggests a framework in which student stress can be minimised over the time at university. However, another factor to take into consideration is based around the goals the student has at commencement of study, before being influenced by the university environment. Estimate of gains can be viewed as the positive dimension of the university experience in contrast to stress as the negative dimension. For example, Conti (2000) suggests that by choosing autonomous goals that will develop important interests and abilities and by giving careful thought to the best means to pursue these goals, people can direct their lives in a manner that promotes mental health and well-being. This view supports the current perception of university as a tool to achieve greater employment success, as it is a 'means to an end' for many students. However, not all goals come from the individual's interests and abilities with many goals being the result of expectations imposed by others. Similarly, many goals are not given the amount of thought needed resulting in difficulty in focusing effort and meeting basic psychological needs (Sheldon & Elliot, 1999). The formation of an adequate personal goal system can be viewed as an important development for an individual, important during major life transitions such as commencement of university life (Cantor and Langston, 1989).

1.7 <u>Aims of the present investigation</u>

Taking all of the above studies into consideration, it would appear of great benefit to perform an investigation which takes into account not only the levels of stress experienced by students (the negative dimension of university) but also the factors of what the student hopes to gain from the environment (the positive dimension of university).

The general approach of the present investigation is thus to explore both student perception of gains and conversely of stress. However, the particular aim is to identify factors at the commencement of university study that may enable prediction of both estimate of gains and experience of stresses. The broader aim is to provide information that may evoke early identification of risk factors in respect to student attrition. To this end, the thesis is concerned with exploring individual differences amongst students that relate to perception of both gains and stress early in the university experience. At the outset of the thesis, variables of most importance seemed to be these identified in past research (as discussed in this chapter), namely financial and related demographic factors. However, it also seemed reasonable that another major consideration may be personal values of students that may link to motivation for and engagement with, the university experience. This issue is considered further in the next chapter.

Chapter 2:The Influence of Values and Gains on the Student Experience

2.1 Background of the Values Theory

Broadly speaking, values are organised sets of general beliefs, opinions and attitudes about what is good and right. According to Sverko (1995), they can be seen as an organisation of a person's needs, desires and goals, with a hierarchical structure according to relative importance and priorities of the individual. In 1968, Milton Rokeach suggested that values can be seen as a much more general idea than attitudes and specific beliefs, with values being more abstract. Attitudes can be seen as being associated with more specific objects and ideas and therefore having a more `physical` origin, whilst specific values can be seen as transcending objects and situations, relating more to a far more general level of belief individuals hold regarding desirable and undesirable modes of conduct and resultant end states of existence and the motivation to reach a desirable end state.

2.2 The Development of the Value Concept and relation to motivation

Research in the area of value differences stems from the vast array of motivational theories available. In order to understand the role of values, it is first necessary to understand the logic behind a number of major theories from which they stem and their relevance to the area.

Possibly the most relevant motivational theories in deriving the influence of values on motivation can be explained primarily through reference to some of the most popular approaches in the area, namely the major needs theories of, Maslow's Hierarchy of Needs (1943), Alderfer's ERG Theory (1972), Need Achievement Theory (McClelland 1961) and Herzberg's Two Factor Theory (1966). Although general, they provide insight regarding the part that values play in the motivation of the individual.

Need theories of motivation see individuals as lacking some factor in the fulfilment of life goals, and it is in working towards the satisfaction of these missing 'needs' and as suggested by Super (1973), the associated values, which motivates the individual, driving them towards reaching progressively higher goals.

2.2.1 Maslow's Hierarchy of Needs (1943).

Probably one of the best known psychologists regarding the achievement of needs in work motivation is Abraham Maslow (1943), who developed a series of five needs, each one graduating from the satisfaction of the previous one, arranged in a hierarchy in which the most important and easily satisfied is at the bottom of the hierarchy, graduating up the hierarchy to the attainment of one's ideal self. These begin with physiological needs such as air, food and water, which when

satisfied lead to safety needs such as a sense of security, social needs such as acceptance by others, esteem needs such as recognition from others and finally complete self-fulfilment from obtaining self-actualisation needs. The hierarchy has the largest percentage of motivation from the base of the hierarchy, as these are the most essential needs, however, the stages resulting in the highest level of motivation rise towards the top, but are increasingly more difficult to attain.

From this theory we can derive the relative importance of different values on motivation, as initially the individual must have some financial reward to fulfil economic values necessary for the basic lower level psychological needs, but as the hierarchy progresses, more emphasis is placed on values such as social interactions, dependent upon the relative values of the individual and their culture. For example, safety needs such as personal security could regard the immediate community, regarding a lack of threat from others, or it could be more financially based on improved dwellings, which would require more money to obtain.

Therefore, it could be suggested that each graduating level of Maslow's Hierarchy and what is required to achieve each need is very individually specific as the perception taken of each need and the values derived from this could differ from person to person.

2.2.2 Alderfer's ERG Theory (1972)

Alderfer's Existence, Relatedness, Growth Theory (1972) differs from Maslow's theory, mainly in the sense that in Maslow's theory, once a need is satisfied, the individual is no longer motivated by obtaining that need, and progresses to a higher level need. In Alderfer's theory, if an individual progresses and cannot satisfy the next need, they will regress towards the satisfaction of a previous need. A further difference is that the needs are not set in any fixed order or orientation and hence any need may be activated at any time. This approach towards needs also simplifies the over constructive nature of Maslow's hierarchy.

2.2.3 Herzberg's Two Factor Theory (1966)

Another need theory which divides Maslow's (1943) hierarchy is Herzberg's Two Factor Theory (1966). Herzberg effectively divided Maslow's theory into upper and lower level motivators, the upper level being classified as motivators, whilst the lower level were regarded as hygiene factors. Motivators include such factors as achievement and advancement. The fulfilment of these factors was suggested to lead to greater satisfaction and, hence, more motivation. Hygiene factors on the other hand, include such needs as relations with others and economic factors (pay). Herzberg (1966) suggested that if these 'hygiene' factors are not achieved, then this will lead to dissatisfaction and a lack of

motivation, whereby if they are met, it will not result in satisfaction but simply a lack of dissatisfaction and cannot, in isolation, cause satisfaction and resultant motivation.

For satisfaction and the resultant motivation to occur, motivators would also be required as these are values intrinsic to the 'work' environment, such as achievement and advancement. This is similar to the higher levels of Maslow's hierarchy, whereas hygiene factors could be said to represent the lower levels of Maslow's hierarchy.

2.2.4 Need Achievement Theory (McClelland 1961).

The above theories suggest work motivation to be the satisfaction of a series or combination of a wide variety of needs. The need for achievement can be seen as a common underlying need throughout the domain of motivation. For example, it could be suggested that, as in Maslow's (1943) theory, individuals strive for the achievement of progressively more difficult to obtain needs in the search for self-actualisation. In all examples, it is the achievement of the primary goals, which results in the continual motivation to work. As a result, commentary in the area (e.g. Statt 1994) likens the need for achievement to Maslow's (1943) higher order needs of self-esteem and self-

actualisation, Alderfer's (1972) views on the need for growth and amongst Herzberg's (1966) motivating factors.

McClelland (1961) suggested the need for achievement (labelled nAch) is a resource with collective importance to a 'society', which should be utilised to aid development. A number of particular preferential situations to promote nAch were suggested by McClelland, these included situations with neither high or low risk but more moderate, the provision of adequate feedback and the acknowledgement of responsibility hence protecting the individual from a fear of failure.

In addition to need achievement (nAch), McClelland also studies two lower order needs, the need for affiliation (nAff) and the need for power (nPow) which can be likened to lower order needs in the other need theories, due to their extrinsic nature, regarding interactions and opinions of others, but have had very little influence on the research into motivation, compared with need achievement.

A conclusion which can be drawn from the previous examples, is the large differences in the number of needs each theorist supports. This could lead, to some disillusionment concerning the credibility of the many conceptualisations of differing needs, and in turn, the value classifications, which are derived from them. However, the basic underlying fact, as Furnham (1992) points out is the level of disagreement regarding the exact number of needs that exist amongst

the many theories and the relationships between them. However, the theories are in agreement that satisfying human needs is an important part of motivating task/situation related behaviour.

Also, although all of the above theories give us a clear description of needs and what priority they have in motivation, they neglect the relative importance of each need, or in this case, each value, and to what extent each influences the motivation of different individuals, in addition to the influence of both individual and environmental differences on the formation of values placed on such factors. It would appear that the individual forms values based upon a number of environmental or situational variables, whereby the amount of satisfaction an individual experiences from the achievement of different values is compared against social norms and any difference has either a positive or negative effect on motivation, positive if we are seen to be above the norm and negative if we are seen to be below the norm.

2.3 Intrinsic Vs. Extrinsic Motivation.

One such development which, when examining motivation, has significance to the previous statement and may be of particular relevance to student progress and experience, regards the excess of intrinsic and extrinsic motivation. The question is still in debate after twenty years of research regarding the relative importance of each and especially whether extrinsic rewards reduce intrinsic motivation e.g. (Arnold 1985,

Thierry 1990). As Wiersman (1992) suggests, studies in this area are important for practical implications because it suggests how extrinsic rewards, in particular, economic factors should be coupled with intrinsic motivation.

This area has a great deal of importance when discussing value differences as the values to which different individuals subscribe will have an effect on the suitability of differing incentive plans in order to result in successful motivation, in this case, of the student when entering the university environment.

It was originally believed by psychologists such as Lawler et al. (1968) that there was an additive effect of intrinsic and extrinsic rewards on performance and motivation. However, it was later suggested that performance dependent extrinsic rewards would reduce the intrinsic motivation given by challenge and autonomy as they could be seen as controlling, but could increase motivation if they provided a standard by which achievement or competency could be measured. Also, Rosenfield, Folger and Adelman (1980) found that a higher level of rewards led to greater intrinsic motivation, but only when rewards reflected ability. Rosenfield et al. (1980) found that increasing (extrinsic) rewards decreased intrinsic motivation when not accompanied by an indication of ability.

Of particular importance in this case are the links between intrinsic motivation and some of the major theories stated earlier. Although, as stated by Dyer and Parker (1975), intrinsic motivation is difficult to define practically, it is a major part of many theories of motivation. In Maslow's (1943) theory, it can be seen as the need to live up to one's potential in the quest for self-actualisation, therefore providing support for Maslow's theory. In Alderfer's (1972) ERG theory, intrinsic motivation reflects the need to investigate and master the environment in the growth need. Wiersman (1992) suggests that a common assumption can be seen in all these theories, which refers to the need for competency.

However, when relating this to differing values, on examination of the research, intrinsic motivation seems to be far more powerful as a motivator in higher level needs and therefore may differ depending on the opportunity to develop and fulfil these needs and values within the parameters of the 'work' role for the student. This would suggest that individuals in environments providing more responsibility and autonomy would be more likely to be strongly motivated by intrinsic motivation whereas environments with less responsibility and autonomy will place more emphasis on extrinsic factors as a main source of reward and resultant motivation. This may be of considerable significance in understanding student motivation.

2.4 Further work on motivation

Early motivation critique was mainly concerned with the oversimplification of the factors of motivation. In recent years however, this has been replaced by the problem of a lack of unification in providing a framework of motivation, as Locke and Henne (1986) stated: "theories abound yet somehow they do not seem to fit in with either the research findings or with each other" (p.1).

In more recent years, motivation research has changed from simply asking the question of whether motivation can make a difference in performance to the more contemporary view of how and when motivation makes a difference (Mitchell 1986). Simply put, this study attempts to give some response to these questions, not from the developing cognitive domain of the influence of ability on motivation. Rather the study tries to answer 'how' in terms of the desired position the individual hopes to achieve and how this has been obtained from the values the individual holds or desires, and 'when' in terms of the motivation of the resultant obtained position and how these motivational values serve to facilitate the requirements of differing tasks within it.

It would appear from the research that the present desire for clarity has spread through the broader field of motivational psychology, encompassing all the areas of clinical, instructional, social and personality research, covered by a wide range of authors, for example,

Bandura (1988), Carver and Scheier (1981), Kuhl et al. (1985), Klinger (1987), Nicholls (1984) and Weiner (1986) to name but a few. The reason for this growth in research over recent years moves the field of motivation closer to potential unification on what constitutes motivation.

However, it must be remembered that in this study, no attempt is being made to classify motivation but to simply study and derive inferences from one aspect of the field, that being the influence of values on what the individual will gain when entering an environment, namely university, which is a constituent part of broader long-term career or life goals.

Over the last thirty-five years, the area of values theory and research has become far more specific, developing its own concepts rather than simply being an addition to general motivational theory. Probably one of the most supported instruments which has been devised to measure values is that of Rokeoch (1973), who identified a total of 36 values, 18 terminal and 18 instrumental. Furnham (1992) suggested that, values not only reflect the individual's motivation but also as Feather (1985) suggests, display the influence of the culture of origin, chosen field of interest, political persuasion, generations within a family, age, sex, personality and educational background. Therefore it could be suggested that values are a far more adaptable construct than general motivation.

From the above overview it is clear that value theories give a means of increasing specificity of general motivational theory in an organisational context, containing all of the different needs and processes in motivation but allowing a motivational measure of fit between the person and the environment to be calculated.

However, as is also the problem with motivational needs, there is little agreement on a comprehensive list of values and the part that each plays in motivation. Part of this is due to the lack of agreement on what actually constitutes a value. Values have been associated with beliefs (Rokeach 1968), Needs (Super 1973), goals (Schwartz and Bilsky 1987), goal choice criteria (Locke 1976) and attitudes (Fishbein and Ajzen 1975). However most theorists are in agreement that values are criteria for the choice and guidance of action and are relatively stable over time, developing both implicitly and explicitly through the influence of personality, society and culture.

Brown (1976) suggested that interest in the motivation of employees has led to the increase in value research, in addition to recognising the importance of complementary values among the employee, supervisor and surrounding organisation. As Furnham (1984) suggests, the present values have developed over time as a means of simplifying, ordering, controlling and rendering more secure both the external world (perception, stimulus, etc.), and the internal world (needs, desires, etc.) and would therefore be acted upon by the social and/or socio-economic

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status of the group of which the individual is a part and therefore it would be likely that differences in values will exist between different groups.

One example of values, provided by Feather (1999), is that honesty as a mode of conduct may be preferred to dishonesty, as honesty is seen as desirable and dishonesty as undesirable (obviously in a utopian society). In addition, equality as an end state of existence or general goal may be preferred to inequality. The former part of this example can be classified as an `instrumental` value according to Rokeach (1968), as it is a single belief taking the form `I believe that `said` mode of conduct, (In this case honesty), is personally and socially preferable in all situations with respect to all objects`. In comparison, a 'terminal' value, as in the latter example of equality, can be explained as taking the following standpoint that, `I believe that `said` end state of existence is personally and socially worth striving for`. However, Rokeach suggested that, in addition to these basic constructs, there is a need to further expand each, in order to truly understand their instrumentality, as Rokeach (1968) suggested that social psychologists have a tendency to ignore the concept of values, instead placing primary focus on the study of attitudes and the resultant effects on behaviour.

Rokeach (1973) suggested that the concept of instrumental values can be divided into two sub-categories, these being moral values and competence values. Moral values can be described as those values, which refer mainly

to modes of behaviour, not necessarily including end states of existence. They can be seen as those values, which have an interpersonal focus and when violated, result in a feeling of guilt for the individual. Competence values on the other hand, have a more individual focus rather than an interpersonal one. The violation of these values, leads the individual to feelings of personal inadequacy. The interaction of these two forms of instrumental values can also result in psychological conflict, both within each form, for example, the moral values of behaving honestly and lovingly, or between the competence values of behaving imaginatively and logically. Psychological conflict can also occur between moral and competence values, for example, to act politely yet offer intellectual criticism. The outcome of these different types of conflict, in terms of the resultant level of guilt experienced by the individual, occurs as a result of the relative strengths of the individual's different values.

In addition to the two forms of instrumental values, Rokeach (1973) suggested that terminal values can be divided into two sub-categories of value, these being personal values and social values, thus allowing an individual to be seen as either self-centred or society-centred, for example, peace of mind can be seen as self-centred, whereas world peace would be society centred. As a result, an individual's personality may vary according to the extent to which their personal or social values have priority and an increase in one aspect (eg. personal), will result in a decrease in the contrasting aspect (eg. social).

However, values cannot be seen as `cold` mechanisms, automatic in nature, acting on the individual. Indeed, Rokeach (1973) goes on to suggest that people usually feel very strongly about their central values and will protect and defend them when challenged, when they are confronted by difficult moral choices and when involved in personal and moral choices of many kinds. In addition, Rokeach (1973) suggested that values have a great deal of stability within an individual but are not unchanging over time. Furthermore, some values which are important during the early years of a person's life may not be important during adulthood and may become superseded by different values according to the individual's development in terms of changing roles and responsibilities, such as entering education, the world of work, or raising a family.

Rokeach (1973) proposes that the antecedents of values can be traced to culture, society (and its institutions) and personality, stating that values are the result of both social and psychological forces influencing the individual. This therefore allows individual motivation in a socially acceptable way.

Therefore, values can be seen as central to the individuals self concept. They bear great importance to self-identity and from this central self-concept are determined an individuals attitudes and behaviours. The smallest set of values influence a persons whole being and attitude system in a hierarchical form, moving from specific to general with a high level of consistency, with values at the core of this system. Although values systems are ordered to function as criteria that guide the thoughts and actions of the individual by

satisfying a variety of motivational functions, they are essentially a self-serving mechanism, used to maintain and enhance self-regard by helping the individual adjust to society, defend the ego against threat and to test reality. The main aspects of this approach can be broadly summarised by suggesting a value to be an enduring belief in a mode of behaviour to achieve a desired end-state, guiding actions and attitudes. As Sverko (1995), suggests, values are operationally defined as general and relatively stable goals which an individual tries to attain. Bearing this in mind, the nature of values will firstly be discussed, followed by a description of goals as a situation specific operationalised representation of the values construct.

2.5 The Values Survey

The above conceptualisation of values was used to define sets of instrumental and terminal values in a classic study of values, `The Values Survey`, (Rokeach,1973), used as a tool for motivational analysis, in terms of what values were important for the individual as a reflection of the effort which would be spent to satisfy them. The Values Survey listed what Rokeach believed to be 18 terminal and 18 instrumental values, each with a short descriptive label, arranged in alphabetical order. An example of the terminal values used were items such as, a comfortable life (a prosperous life), a world at peace (free of war and conflict), self-respect (self-esteem) and a sense of accomplishment (lasting contribution). An example of the instrumental values used included, broad-minded (open-minded), capable (competent, effective), clean (neat, tidy) and cheerful (light hearted, joyful).

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In the initial form of administration, participants were asked to arrange the values in each set dependent upon individual importance, with the most important at the top and least important at the bottom. The resultant rank provided information about the individuals value system, in terms of a hierarchy of importance for both terminal and instrumental values.

The Values Survey has been widely used in research into issues such as the effects of television on values (Ball-Rokeach, Rokeach and Grube, 1984), adolescent values (Feather,1980) and of particular interest in this case, in education, a study of the institutional effects on value change in a college setting over a longitudinal study (Feather, 1973).

The aim of the study conducted by Feather (1973), was to investigate the extent of value priority change in students at Flinders University in Australia over the course of two and a half years of academic study. The students studied were first tested during enrolment in 1969, using part of the Rokeach Value Survey, then a follow-up postal survey was conducted in 1971 of all the students who completed the earlier phase. The results of this study found a relative increase in the values concerning a world of beauty, mature love, intellectual values, forgiving and loving, over the testing period, whilst over the same period of time, the following values were found to decrease significantly in relative importance for all subjects, these being a sense of accomplishment, national security, salvation, ambition, obedience, politeness and self control. One major finding which was noted was that there was very little variance between courses at the university. Therefore

the results showed the effect of the institution on attitude change but not the effect of course, which was mainly attributed to the fact that all individual's results were scored relative to their earlier ratings and not against other subjects on contrasting courses.

Such studies as those mentioned above attest to the usefulness of the values concept and survey methodology in exploring motivational aspects of the student experience as it stands in modern society.

2.6 Further Development of the Values Theory

In a development of values theory, Schwartz and Bilsky (1987,1990) refined the ideas regarding the structure and content of the individuals values system, which was initially proposed by Rokeach (1973) and subsequently developed in great depth by Schwartz (1992, 1996), particularly regarding cross-cultural differences. Like Rokeach (1973), Schwartz proposed that values are criteria people use, stating that values represent, reflected in the form of conscious goals, three universal requirements of human existence: biological needs, requisites of coordinated social interaction, and demands of group survival and functioning. It was these concepts, which led Schwartz to distinguish the expression of different value types in terms of *motivational goals*. For example, the motivational goals that relate to hedonistic values are pleasure and sensuous gratification for oneself, while the specific representative values for this are pleasure and enjoying life. The

motivational goal that relates to achievement is personal success through demonstrating competence according to social standards, with the representative values being successful, capable, ambitious and influential. The motivational goal relating to conformity is the restraint of actions, inclinations and impulses that are likely to upset or harm others and violate social expectations or norms, with the representative values being politeness, obedient, self-discipline and honouring parents or elders. The examples of representative values are part of the Schwartz Value Survey (SVS), developed in 1992, which consisted of an assessment of 56 values based upon motivational goals, many of the values used being taken from the earlier Rokeach Values Survey (1973) but developed to be used cross-culturally. The SVS values were also arranged into two groups, as in the earlier Rokeach survey, which corresponded to the terminal and instrumental values, however, Schwartz did not adhere as strongly to the distinction between the two and instead grouped them into categories in a circular pattern.

According to Schwartz (1992, 1996), there are dynamic relations among the different value types, some which are compatible and some which conflict. A result of this is that an individual who views one group of compatible values as positive on the SVS will have a negative score for the conflicting values as they are incompatible, (for example, universalism and benevolence versus achievement and power). On the other hand, some of the value types would be compatible if simultaneously pursued, such as security and conformity, or power and achievement. It is the value types sharing sections

of Schwartz's circular pattern of values which are compatible, as they are assumed to have similar motivational goals. For example, conformity and security values both relate to an intrinsic value for conservation, whereas self-direction and stimulation (on the opposite 'side' of the circle), both relate to an intrinsic openness to change, thus it would be difficult to pursue both simultaneously. From this, it can be seen that, in this model, values work more as poles, rather than separate entities, as early theories such as that of Rokeach would suggest. For example, the value of hedonism is at an opposite pole to that of conformity and the value of benevolence is at an opposite pole to that of achievement. However, there still exists a number of similarities in the administration of the SVS compared to the original Rokeach values scale. The values in each set of the SVS are once again arranged in alphabetical order, followed by a short definition. However, instead of ranking the two sets of values in order of importance, participants are asked to rate each individual value with a level of its own importance 'as a guiding principle in my life'. Participants are given a nine point scale, ranging from supreme importance (7), very important (6), (unlabeled, 5, 4), important (3), (unlabeled 2, 1), not important (0), to opposed to my values (-1). Therefore the SVS differs as it expands on the original set of values, uses individual rating rather than ranking and allows for the allocation of negative importance of values to which participants may be opposed.

A very good example of the use of this approach was by Feather (1995b), particularly because the participants studied were once again students from Flinders University, Adelaide, South Australia in 1992 and 1993 and could

therefore be compared with those in the earlier study. A total of 239 students were studied from introductory classes in psychology at the university, all being asked to complete a survey containing the 56 item Schwartz Value Survey, rating each of the 56 values with scores of relative importance to themselves. This was performed along with 10 scenarios, such as a graduation scenario where the student had to assign importance to travelling after high school or going straight to university and a career (hedonism and stimulation values versus tradition and security values, respectively), with some scenarios representing contrasting values from Schwartz's circular theory and some which were closer in proximity in this theory, as a measure of valence (or the value within context of the life space *relative to* the individual). Put simply, it is this valence which reflects the view mentioned earlier from Sverko (1995), that values are operationalised as goals relating to different settings at different stages of life, such as work and education.

In general, the results of the SVS, in the Feather (1995b) study, provided support for a positive relationship between value types and valences, supporting the view that an important role of values is to induce valences on objects and events, or in effect, the goal to achieve them. Therefore the study of values can be seen as an invaluable resource in studying how the individual will react to a given situation, for example work, study, family and leisure, especially in terms of what the individual hopes to *gain* from the given situation and their resultant motivation toward the situation.

2.7 Contemporary Work on Applied Values

It is from these major theories (eg, Rokeach, 1973; Schwartz, 1996) that many of values surveys used in contemporary psychology are derived, from applications in occupational psychology to those in educational psychology. One widely used instrument is `The Values Scale`, developed by Macnab, Fitzsimmons and Casserly (1986). In this particular example, the values are condensed into 20 scales, classified as Ability Utilization, Achievement, Advancement, Aesthetics, Altruism, Authority, Autonomy, Creativity, Economics, Life Style, Personal Development, Physical Activity, Prestige, Risk, Social Interaction, Social Relations, Variety, Working Conditions, Cultural Identity and Physical Prowess. In addition, a similar but slightly simpler rating system is also adopted, whereby each value assessment is comprised of five items, with the items being preceded by the stem: "It is now, or will be, important for me to...". Respondents are required to rate each item on a four point Likert type scale as follows; 1) Of little or no importance, 2) Of some importance, 3) Important, 4) Very Important. Although a simplification of the earlier theoretical approaches such as that of Rokeach (1973), tests such as this example have allowed a far more diverse application in the field of values testing by simplifying the testing process whilst still maintaining a high level of validity. Indeed, convergent validity analysis (Macnab et al, 1986), found that such scales are of a particular relevance to real life situations and of particular interest to the present investigation, have been used to study value differences between students and different occupations worldwide. They have been used to

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differentiate students internationally (Super, 1995) and have been successfully related to measures from the Minnesota Importance Questionnaire, the Work Aspect Preference Scale and the Work Values Inventory. In particular, the values of Social Relations, Working Conditions and Economics in the Macnab et al (1986) scale, were found to have counterparts in these instruments. These patterns of inter-correlations and confirmatory factor analysis have supported the validity of these scales for the study of a wide variety of individuals. In addition, discriminant validity analysis found that, in a comparison of the Values Scale (Macnab et al, 1986) and the Vocational Preference Inventory (Holland, 1985), 49 of 120 correlations between these instruments were significant, leading to the suggestion that the value domains being studied cannot be categorised solely as specific interests and are therefore reflective of broad human values, operationalised by goals, in a wide variety of settings. As regards the usefulness and applicability of the approach taken by 'The Values Scale', to the study of values, researchers from eleven countries have used this test in a coordinated study, summarised by Super et al (1995). This study has covered a wide range of nations, from the less developed, to the world's richest and most industrially advanced nations. In addition to this, many different groups of individuals were studied, from the student population to the upper levels of management. This widespread applicability would not only give credibility to this area of values research and the need for further investigation of situation specific values, but also suggest that to examine values in this light is an invaluable perspective for the

understanding of both the groups within a society and the psychology of the individual.

2.8 The Impact of the Value/Goal Relationship on Educational Attainment

The broad concepts of values mentioned above, can be used to understand the impact of the strength of student values, operationalised as goals on the quality of the student experience, at the commencement of study in the present investigation. In particular, the link between student motivation towards the achievement of goals and underlying values may be a key factor in understanding the quality of the student experience and how this experience could be enhanced for the individual. One goal of the modern day student is to become a more attractive investment for employers, by preparing themselves for the world of work.

As mentioned in chapter 1, in a recent survey by UNITE (2003) of the views, concerns and aspirations of today's student body, it was found that around 80% of students, as a result of their time at university, are optimistic about finding the right kind of job. This reflects a common view over the past number of years that university increases the chance of financial success. As Astin (1998) suggested, there has been a shift in the role played by university regarding the outcome of participation, from 'developing a meaningful philosophy of life' to 'being well off financially'.

However, there is an ever increasing problem of student attrition in today's universities, which leads to the question, 'if the majority of students see university as a stepping stone to a better career and increased financial rewards, what reasons can be given for rises in student attrition?', the rationale for this being that 80% of dropouts have been found to occur in the first year and 30% of all withdrawals happening in the first academic term (Adams, 1996).

Of course, reasons for student attrition are many, as noted in chapter 1. Possibly the most widely used explanation is based on the model provided by Tinto (1975). Tinto's model suggests that students who are integrated into the academic and social life of the institution are less likely to drop out. Attrition is a result of the interaction between the societal and personal pressures in the institutional environment. As Brunsden, Davies, Shevlin and Bracken (2000) highlight, the personal characteristics can be divided into a number of pre-entry attributes of the student, which focus on factors including previous educational input, family history and the abilities of the individual. From these pre-entry attributes arise the individual's values, academic intentions and educational commitment. In addition to these personal characteristics, there are also the influences of the experiences of the student whilst in the institution, categorised as social and academic. Tinto (1975) suggested that the individual perceives, or judges their level of integration into these social and academic areas, leading to a re-evaluation of goals and level of commitment combined with external factors. The greater the integration, the less likely the student will drop-out. In recent

years, Rickinson and Rutherford (1995) found the degree to which students felt prepared for the transition to university, both academically and emotionally and the availability of appropriate academic and personal support when entering the university environment to be major factors. Also, Yorke (1997) found the most important factors in student attrition to be incompatibility between the student and his/her course or institution, lack of preparation for the higher education experience, lack of commitment to the course, financial hardship and poor academic progress. All of these studies highlight the importance of a match between student values, goals, motivation and the external context.

In addition to the above examples, studies such as Bers and Smith, (1987) found that both institutional and individual goal commitment have been found to affect persistence, further supporting various parts of Tinto's model and also placing emphasis on goal commitment as the major factor in persistence. Indeed, in a study by Conti (2000), it was suggested that it was not only the goal commitment, but the autonomy of the students' goals from which grade point average could be predicted, in addition to the influence of high intrinsic / low extrinsic goals and greater level of social and emotional adjustment over time. Simply stated, if a student has strong personal goals to succeed at university, as opposed to goals given to them by the institution, they will develop more successfully and be less likely to drop out. This would lead one to believe that it is important for students to have clear and autonomous goals when embarking on a university education. Indeed, Conti (2000) suggests that by choosing autonomous goals that will develop

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important interests and abilities and by giving careful thought to the best means to pursue these goals, people can direct their lives in a manner that promotes mental health and well-being. This view supports the current perception of university as a tool to achieve greater employment success, as it is a 'means to an end' for many students. However, not all goals come from the individual's interests and abilities with many goals being the result of expectations imposed by others. Similarly, many goals are not given the amount of thought needed resulting in difficulty in focusing effort and meeting basic psychological needs (Sheldon & Elliot, 1999). The formation of an adequate personal goal system can be viewed as an important development for an individual, important during major life transitions such as commencement of university life (Cantor and Langston, 1989).

2.9 Elaboration of the Goal Theory

As was stated earlier in section 2.3, goals can be seen as a means of operationalizing values, however, this in itself occurs on different levels, classed as intrinsic and extrinsic. It is necessary, at this point to elaborate regarding the meaning of intrinsic and extrinsic goals. Kasser and Ryan (1996), gave the following definitions of these two types of goals. According to this definition, *Intrinsic* goals are those which are inherently satisfying to pursue because they are likely to satisfy innate psychological needs for autonomy, relatedness, competence and growth and would include such factors as self-acceptance, affiliation, community feeling and physical fitness. An example of this could be seen in an individual's pursuit of

satisfaction of their needs and therefore support happiness and well-being (Ryan et al, 1996). Conversely, *extrinsic* goals have a focus on obtaining reward of some kind relative to others and the positive evaluations of others, examples of this being financial success, attractiveness and popularity. Extrinsic goals usually reflect a certain amount of insecurity and lead one to engage in more stressful, ego-involved and controlled behaviour, which does not satisfy one's needs (Kasser et al, 1995). The result of this is that when individuals are more extrinsically orientated, they are likely to ignore their own needs and engage in activities which work against their health and well-being. This view can be regarded as organismic, as it suggests that all individuals have inherent psychological needs, which must be satisfied in order for well-being to occur (Ryan, 1995). From this viewpoint, goals and values can be regarded as vehicles through which peoples needs can be satisfied. As a result, some goals and values may add or detract from need satisfaction more than others. In addition, some goals and values can be viewed differently between different cultures, as not all are universal. This must always be remembered when making any cross-cultural comparisons. Conversely, many goals and values do appear to be universally valid (see Super et al (1995), section 2.4). This conceptual framework of values leading to goals may thus be a very useful perspective from which to explore student expectations about the university experience.

Findings in the goal setting literature state that, for performance on a wide range of tasks, the existence of a goal leads to better performance than not having a goal at all (Locke et al, 1981). This may be of particular

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significance in understanding student progression. Previously, the majority of goal setting research has been mainly laboratory based, but has evolved to encompass the study of long-term, personally meaningful goals in a persons everyday life (Emmons, 1996). In particular, it is the thought, or reflection given to a goal which would appear to be of primary importance in the pursuit of academic goals, as it has been found that it is these goals which students consistently rate as more difficult and stressful than social goals (Cantor et al, 1987). The result of this is that, although a goal may correlate highly with stress, this could be due to a lack of reflection or intrinsic motivation. However, a high correlation between a goal and stress could also be a result of the high importance placed on achieving this goal. Therefore, to truly understand the importance of the goal in question, for example, vocational preparation, it is necessary to not only look at correlations between this goal and any effects on behaviour, for example stress or well-being, but also 'why' this goal has such an effect, in terms of intrinsic and extrinsic motivation. As Conti (2000) suggests, while the simple action of thinking about one's goals is expected to facilitate intrinsic motivation and adjustment, feeling that these goals have been autonomously chosen and the individual has a high degree of control over the outcome, can make the goal an even more powerful motivator. For example, even though students can be seen to have a great deal of freedom compared to others, many students may be at university as they feel it will satisfy the expectations of parents, teachers or the 'adult world' in general. The result of this would be that the student is driven by external goals, having the satisfaction of the aforementioned in mind rather than the

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development of their own interests and abilities. Studies such as Sheldon and Elliot (1997) suggest that, although goals can be self-chosen by the individual, they are not always fully integrated with the individual's sense of self, therefore reflecting pressures and expectations felt by the individual as opposed to the true development of interests and abilities. As a result, because the individual does not fully identify with the goals they have set themselves, such goals will not be sought after, as vigorously as autonomous goals would be. Therefore, having more autonomous reasons for the pursuit of a goal could lead to better academic performance, higher levels of intrinsic motivation, better adjustment and therefore less stress at the commencement of university study. These considerations indicate that a closer examination of student values and goals may be necessary to appreciate the impact of these on progression and experience.

The view of positive academic outcomes due to greater autonomy and reflection of goals is supported by the findings of the Conti (2000) study. The results of this work found that both reflecting on college goals and autonomy of the goals resulted in a higher level of success in the first semester of university. This was particularly true regarding those who spent more effort on reflection who reported higher levels of both intrinsic and extrinsic motivation. This suggested that those who developed a sense of purpose for being at university also developed a motivational foundation crucial for successful performance and adjustment. The findings support the view that reflecting on goals leads to a greater ability to mobilise energy required for academic pursuits, but are also consistent with patterns of

causality as in the outcome of these pursuits. For example, if an individual has more intrinsic motivation toward study at high school, they will see more opportunity to satisfy goals at university, reflecting on them more and therefore reporting more intrinsic motivation during the first semester of university. Although studies such as this suggest that reflection on one's goals has positive outcomes, it does not rule out the possibility that reflection can also have negative implications for some individuals. For example, studies such as Greenberg (1995) regarding problem-focused coping suggest that, although thought about one's life problems to be overcome can be productive, it can also carry many negative emotional effects which come with thinking over the problems in one's life and could cause more, rather than less stress.

Another important factor in autonomy of one's goals was proposed in the Self-Concordance Model (Sheldon and Elliot, 1999). This model draws on the earlier work of Self-Determination Theory (eg. Deci, 1999), as a way of identifying the mechanism by which the pursuit of autonomous goals leads to well-being. The Self-Concordance Model outlines a process of goal choice that is well matched with an individuals core interests and values, the attainment of these goals and the resultant well-being. This choice of autonomous goals and reflection upon goals could be said to be an important factor not completely related to academic ability. It could be that the capacity to identify these goals and reflect upon them is determined by a student's intellectual ability but can still be seen as a positive factor to aid retention in those less gifted students.

An important point which must also be remembered is that needs, values and goals, in being organismic, could not only be defined by culture but also relative to social group or class, should the distinction between groups be strong enough. From this viewpoint, it could therefore be proposed that those in a university environment may share similar underlying goals and values and this may offer further insights into the university experience and student evaluations of this experience. It is important to look at the strength of these shared goals and values. If they are found to enhance the students' perception of what they will gain from the university experience, then this shared value system is an invaluable tool, not only for helping to understand and prevent attrition, but for promoting student well-being and possibly enhancing performance. In addition to this, it would also be useful to examine the effects of these operationalized values on the level of student stress and conversely, estimated gains, when entering the university environment.

2.10 The Impact of Student Values on Estimate of Gains and Experience of Stress

The perspective provided by the values and goals framework would thus seem to be a potentially useful approach for understanding the factors underlying student attrition on progression. There are arguably clear effects of student values, goals and motivation on student perception of gains or stress. As illustrated in Tables 2.1 and 2.2, student values may lead to certain goals and motivation to achieve these and in turn these will

impact on student assessment of gains and stress. Thus in the present investigation, student values pertinent to university life will be examined as potential indicators student perceptions regarding gains and stress. The potential estimated gains, will be those encompassing a range of facets of life including general education, vocational preparation, personal development, science and technology and intellectual skills (please refer to Chapter 4 for further details). The perception of stress will be estimated according to issues discussed in Chapters 3 and 5.

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│                 Value                    │
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│        Goal (operationalised value)      │
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│          Motivation to attain goal       │
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│   Resultant estimate of gain from        │
│   university experience                  │
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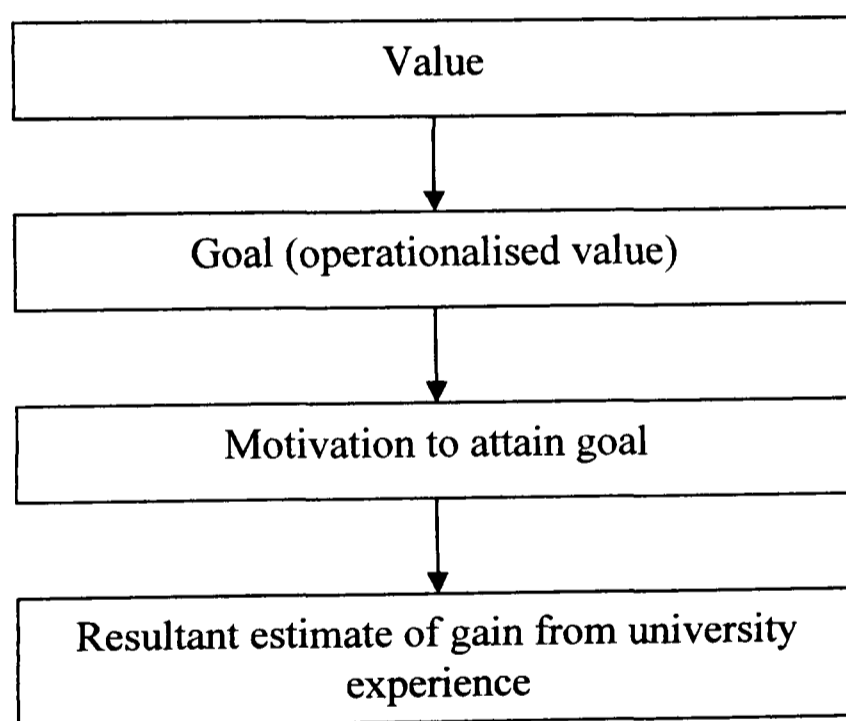
Table 2.1 The links from student work values to estimate of gains from university

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│                 Value                    │
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│         Goal (operationalised value)     │
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│          Motivation to attain goal       │
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│     Success      │   │    Failure or    │
│                  │   │  threat of failure│
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                       ┌──────────────────┐
                       │      Stress      │
                       └──────────────────┘
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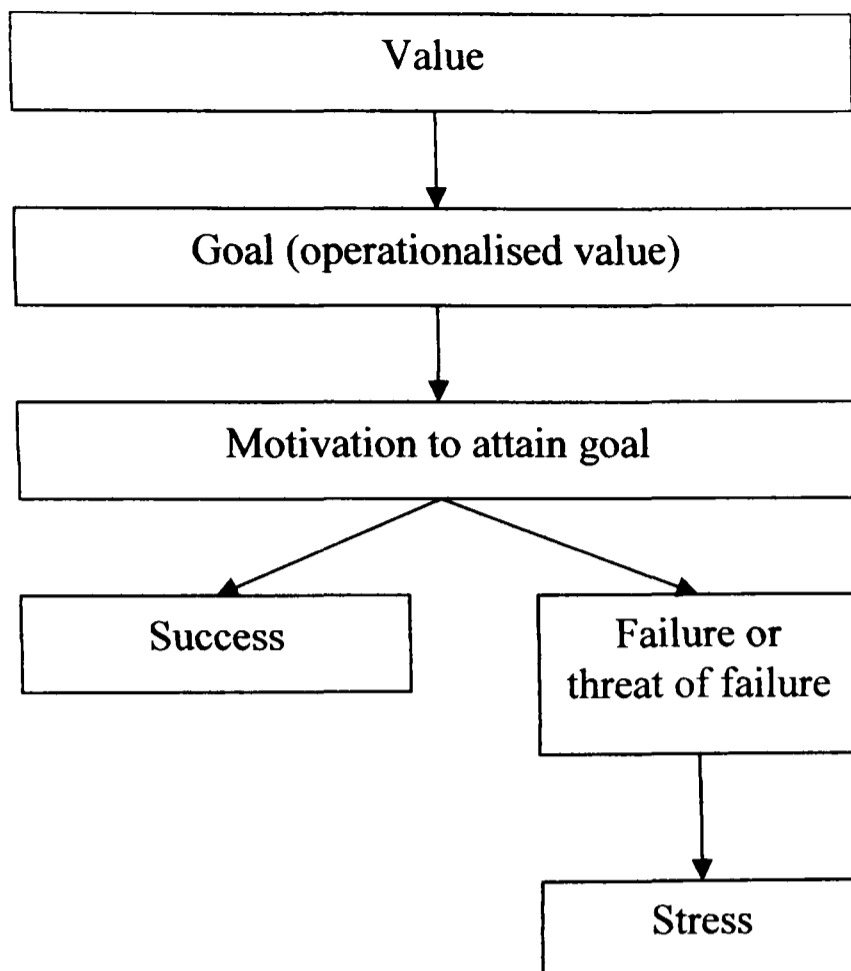
Table 2.2 The links from student work values to stress when commencing university study

Chapter 3: What is Stress?: Perspectives and Effects on Health and Well-Being

3.1 Definitions of Stress

The negative dimension of the student experience is usually defined or encapsulated in regard to the level of 'stress' perceived or felt by the student. When attempting to define the effects of stress, however, the term 'stress' is found to be quite ambiguous. Indeed, this ambiguity has led some to suggest that the term has become somewhat useless as a means of defining a concept (e.g., Ader, 1980). The general relevant Oxford English Dictionary definitions of stress are '1, pressure or tension exerted on a material object (and) 2, a state of mental, emotional, or other strain'

Over the past sixty years, the area of stress research has extended through many different fields, from numerous branches of psychology (Lazarus and Folkman, 1984), anthropology (Sapolsky, 2005), sociology (Aneshensel, 1992) and medicine to name but a few. This wide field of interest contributes to the fact that the primary problem in stress research is a conceptual one. There is a great deal of confusion due to a lack of common vocabulary, with each area of interest and often each writer defining stress in their own terms. Thus, although the term 'stress' is widely used throughout the literature, it has many meanings, dependent on the approach to the subject. This ranges from biological / physiological descriptions (for example,

Lazarus, 1966) to those incorporating the social / environmental context (for example, Holmes & Masuda, 1974).

For the purpose of this study, stress is to be viewed as a psychobiological entity, as the focus in this investigation is on the effects of a combination of the environmental, psychological and biological response to stress. As Cohen (1997) suggests, many definitions of stress have been given, which all emphasize events, responses or perception of a situation as a major force acting on the stress response. However, they all incorporate the consideration of how demands from the environment strain or exceed an organism's ability to cope, resulting in both psychological and biological changes, which may increase the risk of disease.

To understand the importance of the effects of these three varying sources of stress, it is first necessary to investigate each in greater depth, before suggesting the impact that the combination of these may have on the individual. In this case, the individual is the student when entering the university environment for the first time and experiencing the combination of demands which can be viewed as an integral part of the modern day 'student experience'.

3.2 Differing Perspectives on Stress

3.2.1 Environmental Perspective on Stress

From an environmental perspective of stress, stress is a response to psychologically demanding life events and this perspective has, as its main focus the resultant impacts of stress on health and well-being in a wide variety of life situations, such as divorce (Brown & Harris, 1989) or the death of a child or spouse (Kim & Jacobs, 1995). In addition some groups have been found to be at greater statistical risk than others, including women, young and unmarried people, African Americans, and individuals with lower socioeconomic status (Ulbrich et al., 1989; McLeod & Kessler, 1990; Turner et al., 1995; Miranda & Green, 1999). This perspective was developed through the 1970's and into the 1980's, with the viewpoint that it is both the subjective weighting and accumulation of stressors from the environment, which impacts on the level of stress experienced or some combination of these (for example, Shrout, 1981). One of the first instruments developed from this view as a measure of stress is the Social Readjustment Rating Scale (SRRS) (Holmes & Masuda, 1974). Recently a subjective element was more recently added to some versions of the SRRS whereby participants estimated the stressfulness of *their own* experiences. This addition therefore provides responses which are much more reflective of the individual's perception of their own stress level, compared to traditional checklists developed from research into averages and norms amongst the population as to what sources of stress are applicable to the majority. This

has included scales for children (e.g., Sandler & Ramsey, 1980) and the elderly (e.g., Murrell, Norris & Hutchins, 1984).

In addition to the developments in the environmental perspective mentioned above, there is now also interest in the influence of vulnerability factors of the individual and how these make the individual more or less susceptible to stress and resultant illness. This viewpoint has developed from work such as that of Thoits (1983). Thoits noted that, although there are many findings, which suggest that environmental stressors are strongly associated with the development of illness or disease, the majority of people confronted with stressful life events do not become ill. Therefore this points to other major factors in differences in the individual's response to stressful situations and resultant effects on health and well-being when determining environmental effects on stress. Thus it is also important to consider how individual differences in perception and coping mediate the effects of environmental stressors.

Since the developments in stress research in the 1980's, focus has shifted away from studying direct acute effects of stress to the longer-term effects on health of chronic stressors and towards the study of stress confrontation and positive outcomes and especially on how individuals may vary in this regard. Psychological models of stress incorporate these concerns.

3.2.2 Psychological Stress

From a psychological perspective, stress is a result of the perception of physical or psychological harm and of the likelihood or chance of such harm happening to the individual organism. Thus individuals assess the demands facing them from the environment and balance this against what they believe their ability to cope with this situation will be. When they consider the demands to be too great (and hence outweighing their coping ability), this results in a 'stress' response, that may elicit harmful effects on their well-being. Therefore, from this view, it is suggested that, for individuals to suffer stress in a particular situation, it does not solely depend upon the situation they are confronted with, but also on their perception or judgement of the situation and their ability or capacity to initiate and sustain coping strategies or responses. Thus they must not only experience the potentially 'stressful' situation, but also *perceive* the situation *as* stressful. For any one situation, this perception may differ greatly amongst individuals, due to the meaning they attribute to the situation, and how well they consider their ability to cope with the given situation will be.

Possibly the most influential views regarding the individual appraisals of stressful situations are those of Lazarus (for example, Lazarus and Folkman, 1984). Lazarus (1966) proposed that the individual firstly experienced what he termed 'primary appraisal'. Originally, primary appraisal was suggested to be that related to the perception of whether a stimulus is threatening or benign, but this idea was further expanded

(Lazarus, 1981) to include appraisal of harm/loss, threat or challenge. This appraisal occurs between the presentation of the stimulus and resultant reaction, depending on the perceived features of the situation and the psychological structure of the individual. Factors concerning the situation or stimulus that affect the primary appraisal of the individual include the chance of harm, the size, intensity and function of the stimulus and how easy it is to control. Likewise, individuals' self-perceptions that may also affect primary appraisal include beliefs about themselves and the pattern and strength of values and related personality differences.

In the Lazarus models, 'secondary appraisal' is the extent to which individuals believe they can eliminate or reduce the effects of the stressful situation. Secondary appraisal can involve actions to directly affect the threatening situation, such as the fight or flight response (see 5.2.3), or actions to change the perception of the situation and so alter the emotional stress response. For example, the latter emotionally-focused responses can be induced by prescription medication or denial of the situation. If individuals can alter their perception to that in which they believe coping responses are available, they can, in effect, bypass the stress response, minimising or removing it completely. However, as Lazarus (1981) suggests, these evaluative coping methods not only occur at the onset of the stressful situation, but during the course of the event. Therefore, an event which was initially thought of as a threat could later be viewed as benign and coping strategies initially thought to be ineffective, could later be found to be effective for the same source of stress. However, conversely, due to this re-

appraisal, situations originally thought to be benign could become a source of stress and adequate coping methods can become ineffective over the duration of the stressful situation.

Although psychological stress models tend to be too general to determine relations among outcome measures, threat appraisals have been found to cause negative outcomes such as deficits in task performance and changes in interpersonal behaviour (for example, Cohen, Evans, Krantz & Stokols, 1986). The reason for this effect is that the prolonged active coping with a stressor can result in psychological fatigue and deficits in attention, thought and performance.

3.2.3 Biological Response

From a biological perspective on stress, the focus is on the activation of physiological symptoms in response to both physical and psychological demands placed upon the individual. It is the repeated activation of these systems, which places the individual at risk from physical and psychological disorders. The two interrelated systems which are seen as being the primary mechanisms involved in this physiological stress response are those involving the sympathetic adrenal medullary system (SAM) and the hypothalamic pituitary adrenocortcol axis (HPA). This interrelated system can be seen in figure 3.1.

In simple terms, it is the activation of the SAM system which is responsible for the fight or flight response (Cannon, 1932). Cannon suggested that the SAM system reacts to a perceived state of emergency by increasing the secretion of the hormone adrenaline. The SAM activates when an individual faces a challenge of its control of the environment. Via the hypothalamus and the sympathetic nervous system, the adrenal medulla is stimulated by psychological stress to secrete the two catecholamines, adrenaline and noradrenalin, into the blood, preparing the body for 'battle'.

The cardiovascular and neuroendocrine functions activated by the SAM system mobilise energy to the muscles and heart and reduce blood flow to internal organs and the gastro-intestinal system. This has the effect of increasing the individual's capacity for 'fight or flight' when facing threat and hence increase survival. In modern situations, the challenge to the SAM system is more often from social or mental threat rather than physical. Short term activation of this system provides adequate coping with demands from the environment and protects the body. However, repeated or sustained activation of this system can have detrimental effects on health. This has been of particular interest in terms of the effects of psychosocial demands. Many studies, both in the laboratory and in natural settings have shown the sensitivity of the SAM system to a variety of psychosocial stressors, for example, daily stress at work, at home and at school (Frankenhaeuser 1979; 1983; Usdin et al., 1980; Axelrode and Reisine, 1984; Lundberg, 1984). However, in a study such as this present one, the SAM system may be of less interest, due to rather invasory methods of testing for

catecholamines being through samples of urine or blood and also because it is not stress levels at a particular given moment, but rather the prolonged stress levels which are of particular concern. It is thus more useful to examine the role of the hypothalamic pituitary adrenocortcol axis (HPA) in the stress response and corticosteroid release. This system is slower acting (minutes to hours after the stressor) and affects the body over longer time spans (Kolb & Wishaw, 2001) and hence provides a reflection of ongoing stress levels.

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        │ Adrenal Cortex│          │ Adrenal Medulla  │
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        ┌──────────────┐   ┌────────────────────────────┐
        │ Glucocorticoids│   │ Noradrenaline and Adrenaline│
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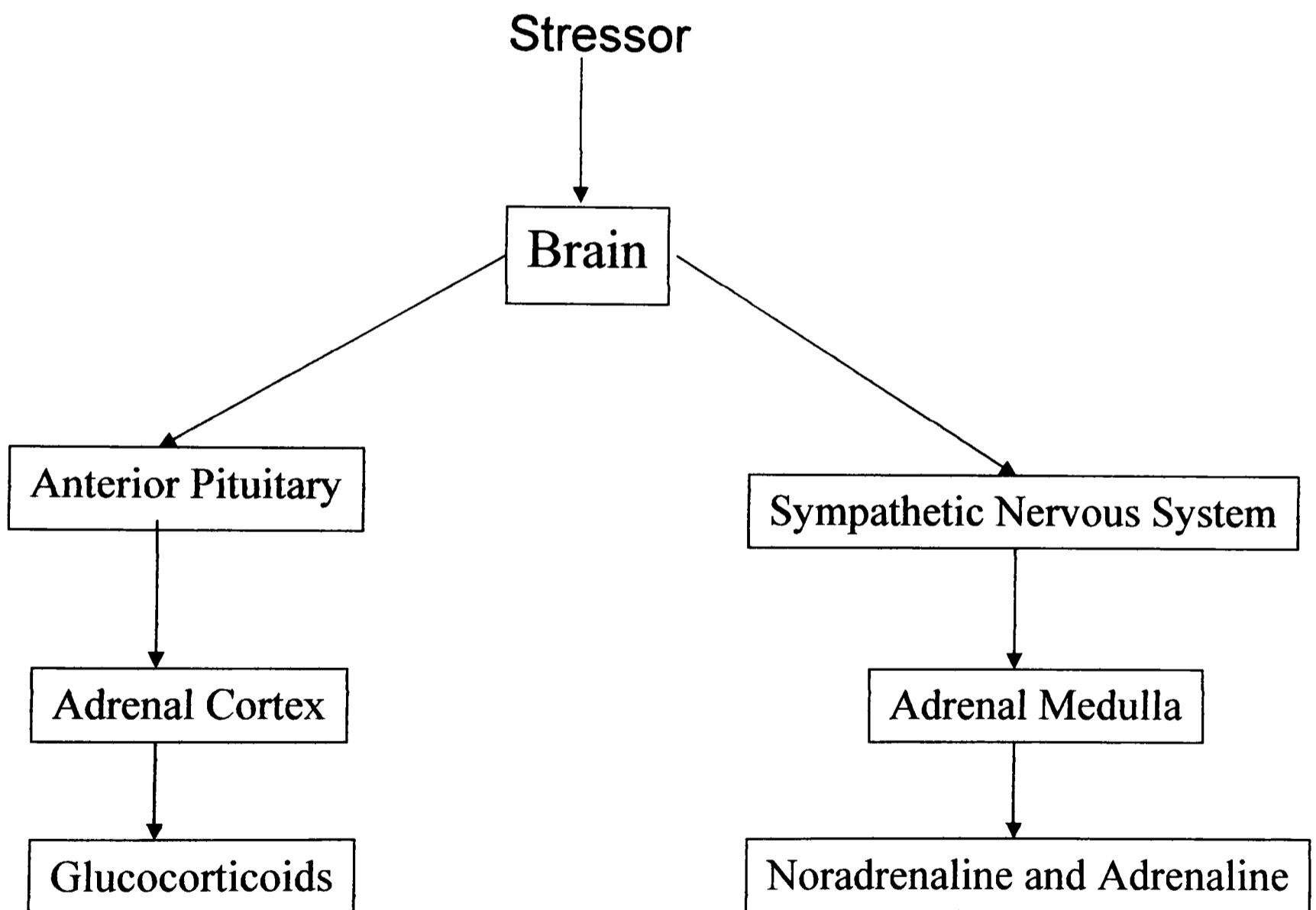
Figure 3.1: The two-system view of the stress response (from Pinel (1999))

Corticosteroids are secreted during and after exposure to some stressors, as part of the systematic arousal of the hypothalamic-pituitary-adrenocortical axis (HPA), initiated by release of corticotropic releasing hormone (CRH) by the hypothalamus. CRH stimulates the pituitary to produce adrenocorticotropic hormone (ACTH), which in turn elicits corticosteroid release from the adrenals. Stress increases this production and larger quantities of primarily glucocorticoids are released in bursts from the adrenal cortex. This one view has been expanded over the years to suggest how this basic mechanism may reflect specific emotional responses to situations, rather than simply as a measure of overall arousal (Hennessy and Levine, 1979; Mason, 1975; Sgoifo, 2003). The level of these glucocorticoids is the most frequently used index of the physiological aspects of stress. In particular, the level of cortisol is often assessed.

In addition to estimating cortisol levels, when looking at psychobiological arousal, it is important to focus on the role of cognition as a mediating force in this process. Of particular importance is the proposal of Berlyne (1967), who suggested a number of 'collative factors' in the response to stressors, being novelty, uncertainty and conflict. It is the first two of these three which are of particular relevance in the student stress response when entering the university environment and hence will be focused upon in this discussion. These factors of novelty and uncertainty are regarded as collative factors, as it is necessary to compare similarities and differences between stimulus elements (novelty), or between stimulus-evoked expectations (uncertainty) in a given stress inducing situation. This suggests that the basic cognitive

process involved in the activation of the stress response is one of comparison. This can perhaps be best illustrated or understood by firstly looking at the role of uncertainty.

Uncertainty appears to be important in many psychological responses. As regards its role in the physiological activation of the stress response, it is also helpful to consider the concept of habituation (Sokolov, 1960). In many respects, an organism can be considered to be in a state of response to any particular environmental stimulus or event that can range from complete uncertainty to complete familiarity or 'habituation'. From this viewpoint a stress response may be more likely, the more uncertain the state. The process of habituation has little variation between individuals and has a pattern familiar to most. When subjects are first shown an unexpected stimulus, they respond with an alerting reaction. The physiological characteristics of this initial orienting reaction include general activation of the brain, decreased blood flow into the extremities, changes in galvanic skin response (GSR) and increases in both catecholamines and corticosteroids. If the same stimulus is frequently repeated, all of these initial reactions will decrease and possibly disappear completely. Once this point has been reached, the individual can be said to be habituated. In Sokolov's model, new stimuli are compared with a representation in the central nervous system of past events involving similar stimuli. It is this matching process, which results in the development of expectancies, a result of which is either habituation to the stimulus, or an alerting reaction, such as fight or flight as mentioned earlier. Therefore, the habituated individual can use their

internal representation of past events involving the same stimuli, to remove or inhibit the physiological responses associated with the alerting reaction. Alternatively, an individual who is not habituated may be seen as being in a higher state of 'uncertainty', leaving open the possibility of an alerting response.

Another of the collative factors leading to psychobiological arousal is that of novelty. Again, this requires a comparison of the present situation and one, which has been experienced in the past, as in uncertainty. However, in the case of novelty, the individual has no expectations about the unfamiliar environment and therefore the environment represents a degree of uncertainty leading to increases in neuroendocrine activity. For example, Mendoza and Barchas (1982) found increases in cortisol levels for those donating blood for the first time. However, if they had been before, no such increase was found.

Although novelty can be explained to a certain extent by the general concept of uncertainty, not all conditions, which create uncertainty can be classed as novel. Uncertainty can also result from a lack of information about the nature of approaching events. If the information regarding the contingencies of a particular event is limited, this will result in an increase in the level of uncertainty. This suggests the influence of predictability of the stimulus or situation in controlling the stress response.

It is a lack of predictability and control over a prolonged period of time, which leads to a state of what is classed as 'learned helplessness' (Seligman, 1975). Learned helplessness results in an inability to perform appropriately due to repeated lack of control or ability to predict the outcome of stressful events, resulting in a reduced coping ability. Thus, it is not just the adversive nature of a stimulus which results in the physiological response, but the individual's evaluation of this stimulus in respect to perceived degree of control. The individual can thus alter their evaluation of a potentially, threatening stimulus if they can control (avoid or master) the aspects of the situation which cause the stress. If an individual repeatedly fails to control the stressful situation, they may be likely to develop acceptance of this situation as being out of their control and so experience a state of learned helplessness. The most dangerous result of this state of learned helplessness is that of Vital Exhaustion (VE). Vital Exhaustion (VE) has three defining characteristics: (1) feelings of excessive fatigue and lack of energy, (2) increasing irritability, and (3) feelings of demoralization (Appels, 1990; Appels & Mulder, 1988a). People often attribute these feelings to overwork, or to problems at work or in other important life areas that the person has not been able to solve, or to a real or symbolic loss (Appels & Mulder, 1988a; Appels, Falger & Schouten, 1993). Therefore, it has been suggested that VE is a mental state at which people arrive when their resources for adapting to stress are broken down, as in the case of learned helplessness.

The concept of VE grew out of an interest in understanding the mental state of 'undue fatigue' and 'lack of energy', a state that, according to the cardiological literature precedes myocardial infarction (MI) and sudden cardiac death (for a review, see Appels, 1990). The prevalence estimates of fatigue and anenergia before these events vary from study to study but range from 30 to 60% (for example, Appels & Mulder, 1988a; Appels, 1990).

Thus, there are strong grounds for considering links between psychological perceptions regarding control over life stressors and physiological stress responses. These links may be critical in regard to psychobiological health and well-being. Therefore, it would appear important to examine the likelihood of this state of learned helplessness and VE occurring in the student population and to subsequently explore potential interventions to minimise these aspects of psychobiological stress.

3.2.4 Combining the perspectives on Stress

Cohen (1997) has developed a heuristic model of a unified stress process to illustrate a possible integration of the environmental, psychological and biological approaches to the measurement of stress (see figure 3.2).

Cohen (1997) suggests that when confronting demands from the environment, individuals calculate the threat posed by the situation and if they have sufficient adaptive capability to cope with them. If they view the

demands from the environment as especially taxing and their adaptive capability as lacking, they will perceive a high level of stress. This stress then results in a negative emotional state and if this negative emotional state reaches an extreme level, this can directly contribute to the onset of psychiatric disorders. These emotional states may also trigger physiological responses putting the individual at risk from psychiatric and

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│            Environmental Demands              │
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│         Negative Emotional Responses          │
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│     Physiological or Behavioural Responses    │
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│ Physical Disease │    │ Psychiatric Disease  │
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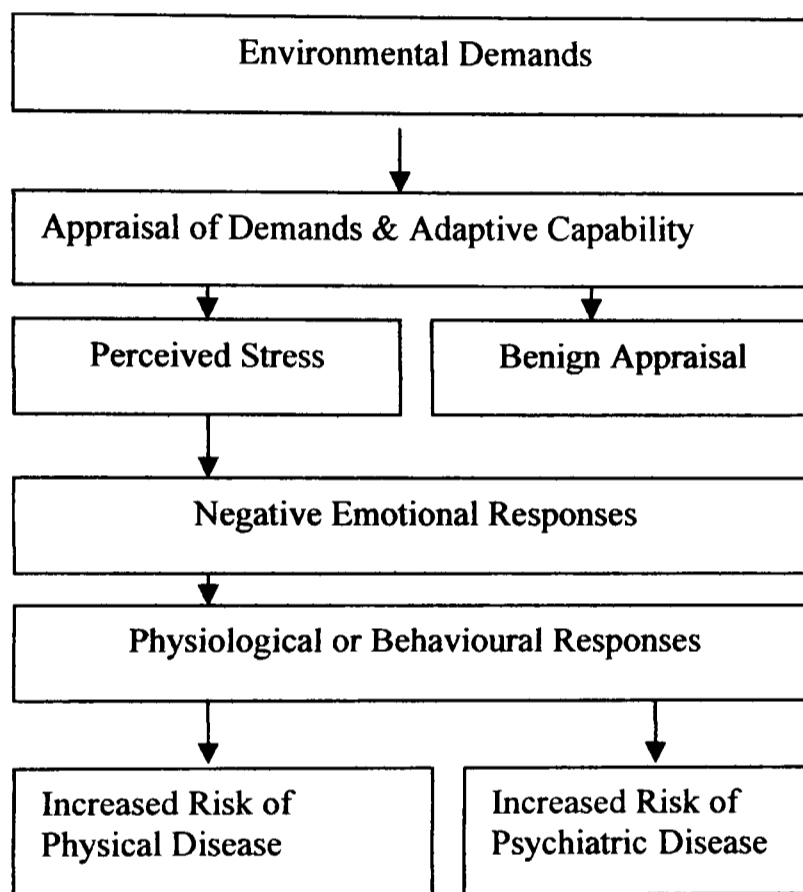
Figure 3.2. A heuristic model of a unified stress process (Cohen, 1997)

physical illness. The model implies that, as one progresses through the stages, they become more predictive of the outcome of illness. An example of this is that a disease-associated biological stress response should be a better predictor of disease than measures of stressful life events.

This leads to the rationale for the use of measures of both perceived stress and biological indicators of stress in any evaluation of the response to

stressful stimuli on events. This conjoint approach thus assesses stress from between the perspectives and focuses on the interaction of the psychological with the environmental in terms of both perceived stress from the environment and the biological indicators of physical stress responses within this environment. This approach would appear of particular value and relevance in terms of the consideration of student stress in regard to the control and support within the university environment and in regard to the locus of control that students perceive they have over their environment. These measures of 'control', combined with measures of perceived and biological stress would allow an integrated perspective on student stress and provide a means for exploring the links amongst environmental demands, student perceptions and physiological responses. This integrated approach may allow inferences to be made regarding risks of physical and psychiatric disease to the student community and may ultimately offer a basis for interventions to minimise student stress. This approach will therefore be developed in this investigation.

Chapter 4: The Influence of Work Values and Demographics on Student Stress and Estimated Gains From the University Environment

4.1 Rationale for Study

As previously noted in Chapter 1, a wealth of studies have noted the effects of a wide number of factors on student well-being, such as additional part-time work (Taylor, Smith and Cooper, 1999), gender (Monk and Mahmood, 1999), future gains (Stansfield, 1998) and most noticeably finances (Tyrell, 1992; Hodgson and Simoni, 1991; Dabney, 1995; Roberts, Golding and Towell, 1998). In addition to this, differences in work values have been studied among student populations around the globe. However, to date, the influence of these work values on the well-being of the student, in terms of both the positive and negative effects when entering university, has received no attention. Therefore it would appear beneficial to the understanding of how the student approaches the university experience, to assess, not only the demographics, but also how the student's values result in both positive (estimated gains) and negative (stress) effects on the well-being of the individual.

The reason for examining these factors is clear. It is important to understand the reasons why a student may leave university, in order to develop measures to prevent this situation from developing. In addition, it is equally as important to understand what the student brings to the

experience in terms of their progress toward their educational goals, to enhance their chances of success. If these positive factors, in this instance values, can be identified, it may be possible to manipulate these in order to benefit students. If intrinsic factors can be identified, it may be possible to enhance further development of these forces. If the factors are extrinsic, greater provision of these may be given to students from the institution.

4.2 Aims of Study

The study aimed to investigate the influence of student demographics (gender, age, debt and hours of work) and values on the estimated gains and stress of students when entering university. Thus the basic independent variables in this study are (a) demographics and (b) values and the dependent variables are (1) estimated gains and (2) perceived stress levels.

4.3 Method

4.3.1 Participants and Design

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
age	211	18	79	21.54	8.130
Debt	211	0	10	5.36	3.02
wkinthrs	207	0	45	10.92	8.995
Valid N (listwise)	180				

Table 4.3.1 Descriptive statistics for additional demographic independent variables

Two hundred and eleven (Male = 73, Female = 138, mean age = 21.54 years, SD = 8.13) first year undergraduates from the University of Gloucestershire served as participants in return for the chance to win forty pounds of Students Union vouchers. The experimental design used was a cross-sectional design to be replicated over two years, with another commencing student sample, in order to ascertain replicability of any findings. The aim of this study then, was to examine factors, which may aid or hinder university study from the outset, within the first month of entering the university environment, for two criterion variables of estimated gains from university and perception of stress. The analysis thus assessed whether the predictor variables of student work values, age, gender, debt and performance of work in addition to study (see table 4.1) predicted either student estimate of gains on perception of stress.

Table 4.1:Table of Variables in Study 1

Predictor Variables	Criterion Variables
A) Work Values	A) Estimated Gains
1)Ability	*1)General Education*
2)Achievement	*2)Vocational Preparation*
3)Advancement	*3)Personal Development*
4)Autonomy	*4)Science and Technology*
5)Economics	*5)Intellectual Skills*
6)Personal Development	B) Perceived Stress
7)Prestige	
8)Social Interaction	
B) Demographics	
1)Gender	
2)Age	
3)Number of Hours Worked	
4)Part-Time/Full-Time Study	
5)Financial Situation	

4.3.2.1 Materials – Predictor Variables

4.3.2.1a Work Values

For the assessment of work values, the study operationalized items from 'The Values Scale' (Mcnab, Fitzsimmons & Casserly, 1986, see Appendix A). This scale was developed to examine the importance an individual places on a range of life values related to work.

For the purpose of this study, the items used were 35 items relating to utilization of ability, achievement, advancement, autonomy, economics, personal development, recognition for their efforts and social interaction. These were arguably the most relevant to the student situation. Each value assessment is comprised of five items, the items are preceded by the stem: "It is now, or will be, important for me to...". Respondents are required to rate each item on a four point Likert scale, (1, little or no importance; 4, Very Important). Higher scores therefore indicating greater importance.

Reliability (from Fitzsimmons, Macnab and Casserly (1985))

Internal Consistency alpha reliability coefficients have been reported for each scale, ranging from 0.67 to 0.91, for English samples. Also, test – retest reliability coefficients over a 4 - 6 week interval ranged from 0.63 to 0.82 (median 0.69). With a shorter time interval, coefficients ranged from 0.62 to 0.88 (median 0.74).

Validity (from Fitzsimmons, Macnab and Casserly (1985)).

Convergent validity analysis found that the scales are of a particular relevance as they have been used to differentiate students enrolled in business and have had success in relating to measures from the Minnesota Importance Questionnaire, the Work Aspect Preference Scale and the Work Values Inventory. With particular relevance to this study, Social Relations, Working Conditions and Economics were found to have counterparts in these instruments. These patterns of intercorrelations and confirmatory factor analysis supported both convergent and discriminate validity of these scales. In addition, discriminant validity analysis found that, in a comparison of the LRI-VS and the Vocational Preference Inventory, 49 of 120 correlations were significant, leading to the author's suggestion that their value domain cannot be categorised solely as interests.

4.3.2.1b Demographics

In addition to the assessment of work values, the study also looked at a range of student demographics which included age, gender, debt and performance of work in addition to study. This was operationalized through the use of open response items, for example, 'Age:_____' and multiple choice items, for example, 'Gender: Male/Female'. This then allowed a

direct method of categorisation and comparison between groups (please refer to the appendix).

The rationale for the use of the selected categories was influenced by the UNITE 'Student Living Report'. Conducted annually, the UNITE report is the most comprehensive analysis of the student experience and therefore can be regarded as an excellent guide to areas of importance to the student population, such as those used in this study.

4.3.2.2 Materials – Criterion Variables

4.3.2.2a Stress

For the assessment of stress, the Perceived Stress Scale, `PSS` (Cohen, Kamarck & Mermelstein, 1983, see Appendix A), was employed to assess changes in student stress as the most widely used psychological instrument for measuring the perception of stress, (Cohen 1994). The scale used in this study, is a 10 item measure of the degree to which situations in one's life are appraised as stressful and hence is an ideal as a tool for this study. Items are designed to discover how unpredictable, uncontrollable, and how overloaded, in terms of stress, respondents find their lives to be. The PSS was designed for use with participants with some degree of formal education and therefore is an ideal instrument in an educational setting. Also, the questions are of a general nature to all individuals and therefore applicable to a wide range of participants. The

questions in the PSS ask about feelings and thoughts during the last month, with respondents being asked how often they felt a certain way. For example, `In the last month, how often have you felt things were going your way`. The responses are rated on a Likert scale, (0, never; 4, very often), higher scores therefore indicating greater importance.

Validity:

Cohen et al. (1988) has studied numerous links between PSS and stress measures, self-reported health and health services measures, health measures, smoking status and help seeking behaviour

Reliability

Higher PSS scores have been associated with greater vulnerability to stressful life-event-elicited depressive symptoms. Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to eight weeks.

Remor and Carrobles (2001) Performed analysis of the PSS on a Spanish sample. The results of this analysis obtained a Cronbach's a = .67. Also, with regard to concurrent validity, PSS correlated (p<.001) with anxiety level and 10 point Likert scale of stress level over a period of one month.

4.3.2.2b Estimated Gains from University

For the assessment of estimated gains, the College Student Experiences Questionnaire, `CSEQ` (Kuh 1999, Pace & Kuh 1998), was employed. This scale was employed due to the past history of successful use of this test in the US, (eg, Bauer, K. W., 1992). In the US, the higher education system has a history of students financing their own studies and hence can be seen applicable to current UK university student funding. The Estimate of Gains scale employed in this study is a subscale of the CSEQ (see Appendix 3), assessing perceived progress toward important educational goals. Twenty-three goals are commonly found in writings about higher education (eg, Davis, T. M., & Murrell, P. H., 1993), and have been used in national surveys over the past several decades in the US (eg, Baird, L. L., 1990). Thus the scale estimates the gains students perceive they will make in regard to these major goals. The estimate of gains scale groups gains into five categories, 1, general education; 2, literature, arts and social sciences; 3, personal development and social competence; 4, science and technology; 5, intellectual skills and vocational competence. Participants are instructed, "In thinking over your experience in college up to now, to what extent do you feel you have gained or made progress in each of the following respects?" Responses are rated on a scale from "very little" to "very much."

Validity

Gains scores have been found to be consistent with results from achievement tests in college student samples (eg. Pace, 1985; Pike 1995) and desired outcomes from university student life (Pace and Kuh, 1998)

Reliability

Pace (1998) performed analysis of the PSS on a sample of American college students. The results of this analysis obtained a Cronbach's a = .77-.87.

These tests were used to examine student demographics, values, stress and estimated gains from university, during progression through higher education. In addition to this, additional questions were incorporated to measure finances in terms of cost of course fees, debt, income, place of residence (university halls / house, private rented, lodgings, own property, with parents, other), expenditure (accommodation, bills, food, alcohol and other expenses) and hours of work, utilising yes/no answers and open-ended responses relating to choice factors and student support services in general (see Appendix). These questions were then used to pinpoint areas of interest for the development of interviews and focus group discussions for the purpose of qualitative analysis to assess student satisfaction with university life and any associated problems experienced.

4.3.3 Procedure

The procedure for this study involved recruiting a random sample of student participants during the registration period, so as to gain as much variety as possible. This was achieved by inserting questionnaires, with a confidential reply envelope, into every third registration pack and providing an information desk in the registration hall to answer any queries relating to the study. A total of 800 questionnaires were distributed in total. Completed questionnaires were then collected over a two week period using 'response boxes', placed in the reception area or bar of each campus, supported by reminder posters. In this first round of testing, a total of 214 completed questionnaires were returned (26.75%)

For study 1, student numbers were requested in order to form a key for distribution of the second wave of testing. Once this key had been compiled, all student numbers were removed and replaced by an unrelated code as a means of identification.

4.4 Results

4.4.1 Reliability Analysis

As the study used existing test subscales which had been tailored specifically for the required sample of students from this institution, Cronbach's alpha (α) was calculated for each of these scales to ensure reliability was not affected by the manipulation of using individual scales

as opposed to using the tests in their entirety. The results of this can be seen in table 4.4a.

4.4a) Table of Factor Labels and Scale Reliabilities (α Scores).

Factor Labels	α Scores
Value - Ability Utilization (V-AU)	.72
Value - Achievement (V-AC)	.75
Value - Advancement (V-AD)	.81
Value - Economic (V-EC)	.87
Value - Personal Development (V-PD)	.67
Value - Prestige (V-PR)	.85
Value - Social Interaction (V-SI)	.79
Gain - Personal Development (G-PD)	.77
Gain - Science and Technology (G-ST)	.64
Gain - General Education (G-GE)	.67
Gain - Intellectual Skills (G-IS)	.77
Gain - Vocational Preparation (G-VP)	.63
Stress (S)	.81

A breakdown of the results found for each test was as follows:

a)   The Values Scale (Macnab, Fitzsimmons & Casserly, 1985)

Preliminary analysis in this study found α =.67[1] - .87, resulting in the conclusion that the scales used had not been affected by manipulation in this study.

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[1] Although some of the α scores were below the minimum level of .7 recommended by Nunnally (1978). These marginal levels are accepted in this case due to the small number of items in each scale ($\leq$ 10).

b)   *The Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983)*

Preliminary analysis in this study found $\alpha = .81$, resulting in the conclusion that the scale used had not been affected by any manipulation in this study.

c)   *The College Student Experiences Questionnaire (Pace & Kuh, 1998)*

Preliminary analysis in this study found $\alpha = .63 - .77$, resulting in the conclusion that the scales used had not been affected by manipulation in this study.

Therefore, the conclusion of this preliminary validity analysis was that reliability was not affected by the manipulation of using a number of individual scales from each of the testing instruments used as opposed to using the tests in their entirety.

4.4.2 Work Values, Estimated Gains and Stress

In order to predict estimated gains (personal development, science and technology, general education, intellectual skills and vocational preparation) and stress with criterion variables of student work values (ability utilization, achievement, advancement, economic, personal development, prestige and social interaction), a series of multiple

regression analyses were performed, firstly on the total estimate of gains and then on each of the gains in turn.

4.4.2.1 Influence of Work Values on Total Estimate of Gains

A multiple regression analysis was used to assess total student estimation of gains from university (n = 174), with predictor variables of student work values. Regression analysis indicated that the values of achievement (β = .29, p < .01), advancement (β = -.27, p < .03) and personal development (β = .23, p < .03) were significant predictors of overall estimate of gains (R^2 = .2). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high total score of estimated gains from university is high achievement value, with additional influence from advancement and personal development.

4.4.2.2 Influence of Work Values on Estimation of Personal Development Gains

A multiple regression analysis was used to assess student estimation of personal development gains from university (n = 203, mean = 10.77), with predictor variables of student work values. Regression analysis indicated that the values of prestige (β = .29, p < .01), personal development (β = .24, p < .3) and economics (β = .21, p < .04) were significant predictors of personal gains (R^2 = .16). Other variables in this model were not significant. This suggests that among all the variables included in this

model, the most important predictor for high estimated personal development gains from university is high prestige value, with additional influence of personal development and economic values.

4.4.2.3 Influence of Work Values on Estimation of Science and Technology Gains

A multiple regression analysis was used to predict student estimation of science and technology gains from university ($n = 205$, mean = 6.21), with independent variables of student work values. Regression analysis indicated that the values of achievement ($\beta = .33$, $p < .01$), advancement ($\beta = .3$, $p < .02$) and personal development ($\beta = .21$, $p < .05$) were significant predictors of science and technology gains ($R^2 = .15$). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated personal development gains from university is high achievement value, with additional influence from advancement and personal development.

4.4.2.4 Influence of Work Values on Estimation of General Education Gains

A multiple regression analysis was used to predict student estimation of general education gains from university ($n = 199$, mean = 11.96), with

predictor variables of student work values. Regression analysis indicated that the value of social interaction (β = .20, p < .03) was the only significant predictor of general education gains (R^2 = .08). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated general education gains from university is high social interaction value.

4.4.2.5 Influence of Work Values on Estimation of Intellectual Skill Gains

A multiple regression analysis was used to predict student estimation of intellectual skill gains from university (n = 204, mean = 10.07), with independent variables of student work values. Regression analysis indicated that the values of advancement (β = .29, p < .02) and personal development (β = .25, p < .02) were significant predictors of intellectual skill gains (R^2 = .2). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated intellectual skill gains is high advancement value along with personal development values.

4.4.2.6 Influence of Work Values on Estimation of Vocational Preparation Gains

A multiple regression analysis was used to predict student estimation of vocational preparation gains from university (n = 206, mean = 4.76), with independent variables of student work values. Regression analysis indicated that the value of autonomy (β = .3, p < .01) was the only significant predictor of vocational preparation gains (R^2 = .14). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated vocational preparation gains from university is therefore high autonomy value.

4.4.3 Influence of Work Values on Perceived Stress

In order to assess the effects of values on the second dependent variable, a multiple regression analysis was used to predict student perceived stress at university (n = 202, mean = 16.97), with independent variables of student work values. Regression analysis indicated that there was no significant effect of values on perceived stress (p>.05).

4.4.4 Demographics, Estimated Gains and Stress

In order to predict student estimated gains (personal development, science and technology, general education, intellectual skills and vocational preparation) and stress with independent variables of student demographics (gender, age, number of hours worked, full-time/part-time study and debt), a second series of multiple regression analyses were performed and significant results recorded.

4.4.4.1 Influence of Demographics on Total Estimation of Gains

A multiple regression analysis was used to assess total student estimation of gains from university (n = 174), with predictor variables of student demographics (gender, age, number of hours worked, full-time/part-time study and debt). Regression analysis indicated that there was no influence of these on a total measure of estimated gains. However, gains were then tested individually to examine if certain demographics influenced individual gains, giving the following significant results:

4.4.4.2 Influence of Demographics on Estimation of Personal Development Gains

A multiple regression analysis was used to predict student estimation of personal development gains from university (n = 203, mean = 10.77), with independent variables of student demographics. Regression analysis

indicated that student income per month (β = .23, p < .01) was the only significant predictor of personal development gains (r^2 = .1). Other variables in the model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated personal development gains from university is income per month, with those receiving more money per month perceiving that they will gain more in terms of personal development.

4.4.4.3 Influence of Demographics on Estimation of Intellectual Skill Gains

A multiple regression analysis was used to predict student estimation of intellectual skill gains from university (n = 204, mean = 10.07), with independent variables of student demographics. Regression analysis indicated that gender (β = -.24, p < .01) was the only significant predictor of intellectual skill gains (R^2 = .1). Other variables in the model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated intellectual skill gains from university is gender, with males predicting that they will gain more in terms of intellectual skills than females.

4.4.5 Influence of Demographics on Differences in Estimated Gains and stress

To test whether the particular demographics of finances, hours of work and age differed in level of (a) estimated gains experienced and (b)

perceived stress, a series of ANOVAs were conducted. This form of analysis was used in order to assess differences between the categories of students studied on these demographic variables. Although not all demographics were found to have an effect, some significant results were found. These were as follows:

4.4.5.1 Hours of work and Gains

A one-way between-groups ANOVA was conducted to explore the impact differences in of hours of work on a total score of gains. Subjects were divided into four groups, (0-4, 4.1-10, 10.1-16 and 16 and above hours worked). These groups were used as due to the exploratory nature of this aspect of the study, they best represented the sample, giving acceptably equal sample sizes and allowing assumptions to be made regarding pupils at the institution studied..A marginally significant difference was found, $F_{(3, 187)} = 2.39$, $p < .08$. Post-hoc analysis using Scheffe's test indicated that a significant difference existed between the means of the 0-4 (M = 41.49, SD = 7.46) and 16 and above (M = 46.83, SD = 7.25) hours of work groups, $p < .04$. This result found that those students working more hours perceived that they would gain more on the whole than those working few or no hours.

4.4.5.2 Age and Stress

A one-way between-groups ANOVA was also conducted to explore the impact of age on a total score of perceived stress. Subjects were divided into three groups, (18, 19-20, and over 20 years of age). As noted above, these groups were used as due to the exploratory nature of this aspect of the study, they best represented the sample, giving acceptably equal sample sizes and allowing assumptions to be made regarding pupils at the institution studied. A significant difference was found, F (2,201) = 4.82, p < .01. Scheffe's test indicated that a significant difference existed between the means of the 18 year old (M = 18.33, SD = 5.29) and over 20 (M = 15.15, SD = 6.58) years of age groups, p< .01. This showed that younger students experienced greater stress when entering university than those who were over 20 years of age.

4.4.5.3 The Effect of Gender on Differences in Estimated Gains and Stress

In addition to these ANOVAs, a number of t-tests were conducted to test whether the demographics of gender and reported financial difficulty had an effect on differences in stress and estimated gains. This method of analysis was used, as it was a comparison of the differences between two groups, these being male and female on students with or without financial problems. Although not all demographics were found to have an effect on

these factors, some significant results were found for gender. These were as follows:

4.4.5.4 Gender and Gains

A significant difference was also found between the overall gains scores for males (M = 46.97, SD = 10.09) and females (M = 42.16, SD = 8.19), t (190) = 3.56, p< .01. The magnitude of the differences in the means showed a moderate effect (eta squared = .06). Therefore males expect to gain more from their time at university than females.

4.4.5.5 Gender and Stress

A significant difference was found between the stress scores for males (M = 15.60, SD = 5.39) and females (M = 17.67, SD = 6.11), t (199) = -2.33, p< .03. The magnitude of the differences in the means showed only a small effect (eta squared = .03). Therefore females experience a higher level of perceived stress when entering university than males.

4.5 Summary of Results

4.5.1 The Influence of Student Work Values on Estimated Gains From University and Stress

Although only weak, it was found that those with more intrinsic values (achievement, advancement, autonomy and personal development) felt they would gain more in total from their time at university. However, it was found that estimates of personal development gains were influenced by both intrinsic and extrinsic values, with the strongest being that of the extrinsic value of prestige, suggesting that, to those entering this institution, the rewards given from the opinions of others hold the most importance when judging one's level of personal development.

Gains involving the development of understanding of science and technology were influenced most by the work value of achievement, suggesting that those who are intrinsically driven by achievement recognise the university as a facility from which they can better their knowledge of technical systems to aid future achievement. In terms of general education gains, the only significant work value was social interaction, an extrinsically focussed value. This could be translated to represent a gain which is beyond the sphere of academia and encompassing more general life or societal education. Intellectual skill gains were influenced by intrinsic work values, with the strongest being that of advancement, suggesting that those seeking university as a means to advance their careers, see it as a way of increasing not only their knowledge, but also their intellect.

Finally, in terms of vocational preparation gains, the only significant predictor was that of the intrinsic value of autonomy, possibly indicating

that self-motivated or autonomous students perceive they will gain most in terms of preparation for the wider world of work beyond university. In all, general education aside, it would appear from the results that intrinsic work values at the commencement of university study are the best predictors for identifying those students who believe they will gain more from the university environment.

As regards the negative aspects of the university experience in terms of the stress experienced at commencement, it was found that values did not predict the stress experienced by students. This suggests that nurturing student work values would be useful to enhance the positive aspects of the university experience but may not help to avoid the negative effects in regard to perceived stress.

4.5.2 The Influence of Demographics on Estimated Gains From University and Stress

Only a few weak associations were found for the influence of demographics on student estimated gains. In terms of personal development gains, income per month was the only significant predictor, with those receiving more money per month perceiving that they will gain more in terms of personal development. This could be seen to reflect the earlier findings regarding the influence of the value of prestige, but also reflects research suggesting financial difficulty as a major factor in student

dropout (for example, Barker, 2001). This finding could be seen to highlight a diminished feeling of personal development gains from university for those receiving a low income. Also, regarding intellectual skill gains, gender was found to be the only predictor, with males believing they will gain more in terms of intellectual skills from the university environment.

4.5.3 Demographics and Differences in Estimated Gains From University and Stress

Contrary to the expected result, it was found that those working fewer than 4 hours a week perceived themselves to gain significantly less than those working more than sixteen hours weekly. This could be explained as those working a higher number of hours consider this to be an integral part of the student experience, in which higher hours will result in higher income. In addition, those working less hours may not do so by choice, but because of a lack of availability of work. Also, as regards stress, it was found that those students of 18 years of age perceived themselves to be significantly more stressed than those over the age of 18 when entering university, perhaps reflecting a greater level of uncertainty due to less time making the decision to come to university. In addition, it was also found that males had higher total estimated gains than females and from these stress scores, it was found that females showed significantly higher stress levels than males.

In summary, the general findings from this study can be summed up as those with more intrinsic values feel they will gain more from their time at university but may judge their personal development by the opinions of others. In addition, subjects with a higher income felt they would gain a higher level of personal development. Also, those working more than 16hours per week felt they would gain more in total than those performing little or no additional work. As regards gender, males believe they will gain more intellectual skills from their experience and believed they would gain more in total than females. In addition to this, females also felt a higher level of perceived stress when entering university, as did those of 18 years of age, compared to older students. Overall then, the study clearly highlights that both intrinsic and extrinsic factors may influence student estimate of gains and of stress. The usefulness of the values approach has been vindicated by the findings, but it is clear that other considerations can also be useful.

The findings of this study thus suggest further investigation into the negative factors, which cause stress and the positive factors, which increase the perception of what the student will gain from their time at university, from both intrinsic and extrinsic perspectives. In the next stage of testing, qualitative analysis, in the form of thematic analysis of a series of student interviews, will be used to further identify factors important for student well-being when entering the university experience.

Chapter 5: Study 2: Focus Group Interviews: Qualitative Identification and Analysis of Additional Themes relating to the Student Experience.

5.1 Rationale for Testing

The first round of questionnaire testing provided a large amount of data in relation to the effect that student work values have on their educational goals and therefore reasons for staying at university. However, this first round did not illuminate any reasons for student dropout being due to levels of stress experienced in relation to student values. As a result of these initial findings, it is felt that second generation testing should be expanded to include more factors which may act upon the levels of stress experienced by the student when entering the university environment. The reasoning for this decision is due to the findings from a number of open response questions added to the first questionnaire as a means of elaboration for future testing. There were a number of responses to the questions given that addressed the problem of student life from the perspective of the influence of the individual's environment *in addition to* the individuals own perceptions. This can be seen in Table 5.1, which shows the frequency data for the responses to the open questions answered.

Table 5.1: Frequency data from open response questions round 1 testing.

What factors may influence your choice of any additional work whilst at university?

Response (N=139)	Frequency
Number of available hours	60
Pay	42
Flexibility	38
Location	21
(Existing) Prior employment	10
Relevance / Interest	9
Workload	5

How may your financial situation have an effect on stress experienced?

Response (N=117)	Frequency
Worrying about money / debt	66
No time or money for recreational 'extras'	19
Lack of money for course materials	14
Less time for college work	12
No money for food / bad diet	6

How may your financial situation have an effect on social life?

Response (N=137)	Frequency
Lack of money to socialise / meet new people	124
No freedom due to demands of work / study	13

Are there ways in which you feel student support services could be improved?

Response (N=43)	Frequency
Offer more financial help	15
Better general information upon arrival	9
More information on how to contact support services	8
More informed / helpful advisors	7
Mature student representation	2
Better childcare arrangements	1
More help finding jobs	1

What is the main problem you feel you may experience with student life?

Response (N=177)	Frequency
Course expenses / money	47
Work / study demands	34
Lack of money / time	28
Juggling course with family / children	17
Commuting / travel	12
Lack of facilities / accommodation	8
Lack of early assistance	7
Bad diet	7
Stress	6
No time for sport due to timetable	5
No steady income	5
Adjusting to academic life	5
Age	4

What aspect of student life are you most looking forward to?

Response (N=184)	Frequency
Social	118
Learning / Gaining qualification	37
Independence	21
Entire 'student experience'	8
Sport	7

These responses in Table 5.1, were then used to construct a number of broad questions for a series of semi-structured interviews in this focus group study. The results of these interviews were then analysed to identify additional areas or themes of study, that would allow further assessment of the student experience contributing to student dropout and retention before study even commences (please refer to Method for further details). These themes were then incorporated into the design of the questionnaires in study 3 (Please see chapter 6).

5.2 Method

5.2.1 Participants

The participants were 10 students (Male, N=2, Female, N=8) aged between 18 and 45 years and were all first year students at the University of Gloucestershire early in the first semester of study. The participants were chosen at random from all subject areas and were recruited from each of four campuses in order to geographically cover the student population as fully as possible.

5.2.2 Materials

Opinions given from the subjects in study 1 in answer to a number of open response questions (please refer to appendix) were considered in order to derive themes that may reveal additional factors or variables pertinent to

student retention or attrition. These variables would then be assessed or incorporated into the next round of questionnaire testing. From the frequencies of these open responses, a number of questions were thus constructed and put to the sample in this focus group study (please see table 5.2)

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1) Institutional Influences

Why did you come to the University of Gloucestershire?

What do you want to get from your time here?

2) Individual Influences

Which do you feel is more important, gaining independence and meeting new people or gaining a qualification?

What are the main problems you feel you may experience with student life?

3) Influence of Social Networks

Are there issues concerning lecturers or staff, the way that studying is organised, accommodation, friends, societies etc?

Will you miss your parents and friends from home?

---

4) Specific Issues Relating to Retention / Dropout

What do you feel has the greatest effect on your success at university?

How much effect does the university environment have?

How much of your success is due to your own personal efforts?

5) Influence of Academic and Additional Work

Do you feel that working and studying may cause any problems?

How do you feel you will cope with academic work demands?

Table 5.2: Interview Themes Schedule for the Focus Group Interviews

The responses to these questions by the focus group were then categorized into various themes from which further variables / fields of study were derived for incorporation into the next questionnaire study (please see chapter 7)

5.2.3 Procedure

As mentioned earlier, participants were selected randomly from all University of Gloucestershire locations. Participants were approached in recreational areas and asked if they could possibly spare the time to take part in a university study. If the response to this was positive, participants were given a written introductory letter explaining the purpose of the study: that it was part of a University of Gloucestershire study into student well-being at the commencement of the student experience and assured

complete anonymity. Participants then completed a consent form which was returned to the interviewer. All participants gave their permission for the interviews to be tape-recorded to aid with interview transcription at a later date. The interviews were then held where the participant felt most at ease, which was a quiet area in a student refectory or similar area. All responses were recorded using a stereo microphone attached to a minidisk recorder. This microphone was placed in the centre of the table when subjects were being interviewed to minimise any effect of background noise.

Participant interviews began with the question 'Why did you come to the University of Gloucestershire?'. The interview then continued with prompting, when needed, by the researcher until all the themes which had been developed as part of the interview schedule, had been covered. To complete the interview, participants were asked if there was anything else they would like to add and if they had any questions. When it was agreed that everything had been covered that they felt applicable, the interview was considered finished and the participant thanked for their assistance.

When the interview had been completed, the recordings of each session were transcribed and comments from each session clustered under the questions and sub-questions contained within the interview schedule. The resulting clusters were then thematically analysed by myself and a second experimenter, qualified in the field of qualitative analysis, particularly in a higher education setting.

5.3 Results

Thematic analysis was performed by two independent researchers on all the resulting comments given by the participants and from this, a number of themes were identified.

The frequency of each response in terms of how many times each theme was raised was recorded for all the participants. In addition to this, the results were given to a second experimenter, with experience in qualitative analysis of the student population for the analysis of the university experience. This second experimenter also completed the same task, in order to provide an indication of the reliability of the thematic analysis. The frequency results of this analysis are given in table 3 below, with additional frequencies given by the second experimenter given in brackets.

Question / Theme	Number of Responses (N=10)
1) Institutional Influences	
Why did you come to the University of Gloucestershire?	
Theme 1: The Normal thing to do	5(5)
Theme 2: Personal Achievement	2(2)
Theme 3: Expectations of Others	2(2)
What do you want to get from your time here?	
Theme 1: Achievement / Advancement Opportunity	2(2)

Theme 2: Social Opportunity

6(6)

2) Individual Influences

Which do you feel is more important, gaining independence and meeting new people or gaining a qualification?

Theme 1: Independence

4(4)

Theme 2: Qualifications

2(2)

What are the main problems you feel you may experience with student life?

Theme 1: High Workload

7(7)

Theme 2: Lack of Friends / Social

1(1)

3)Influence of Social Networks

Are there issues concerning lecturers or staff, the way that studying is organised, accommodation, friends, societies etc?

Theme 1: Support – High

2(2)

Theme 2: Support – Low

3(3)

Will you miss your parents and friends from home?

Theme 1: Homesick- Negative

1(1)

Theme 2: See as a Challenge- Positive

3(3)

4) Specific Issues Relating to Retention / Dropout

What do you feel has the greatest effect on your success at

university?

Theme 1: High Demands	1(1)
Theme 2: A Sense of Personal Achievement	6(6)

How much effect does the university environment have?

Theme 1: High – Negative	4(4)
Theme 2: Low – Positive	6(6)

How much of your success is due to your own personal efforts?

Theme 1: Confident – Positive	8(8)
Theme 2: Luck – Negative	1(1)

5) Influence of Academic and Additional Work

Do you feel that working and studying may cause any problems?

Theme 1: Effect of Cumulative workload – High	2(2)
Theme 2: Effect of Cumulative workload – Low	5(5)

How do you feel you will cope with academic work demands?

Theme 1: High Coping – Positive	5(5)
Theme 2: Low Coping – Negative	3(3)

Table 3: Frequency of comments for each theme

5.4 Inter-rater Reliability

Once the initial coding had been completed by the first experimenter, the comments collected from the interviews were all made anonymous and given to the second researcher, along with a coding sheet for duplicate coding. Agreement was reached between the researchers with no dispute as to the coding, suggesting the coding categories to be accurate and acceptable.

5.5 Summary

It must firstly be noted that participant numbers for this study were low. However, this is deemed acceptable, as the purpose of this stage of analysis was to find the most appropriate areas in which to develop the questionnaire used in the first round of testing. The aim was to further expand the field of study into influences on the student in regard to either continuation of their education or susceptibility to leave the institution.

The results would suggest that it would be pertinent when expanding the questionnaire during the next stage of testing, to include additional measures in order to examine the effects of the demands from the environment, shown in the responses to questions regarding the influence of academic and additional work. Level of support given to the student was highlighted in the responses to questions regarding the influence of social

networks and control, highlighted by the specific issues relating to retention/dropout responses, in that the effect of the university environment and personal efforts on success was seen important by almost all questioned. This viewpoint reflects recent research by Cotton et al (2002), who used an amended version of Karasek's (1998) Demand-Control-Support model to examine the students' perception of control and the corresponding relationship to stress and performance. Indeed, the results of the study showed that the level of psychological distress in university students was linked with the work environment, in terms of high work pressure, low control and low support within their environment. In addition, high satisfaction was found in situations of low demand and high control and support from students was only significant in reducing psychological distress but not increasing performance, suggesting that improved support is beneficial in maintaining university student well-being. Also, although some themes were seen to have a very low response rate, often 1 or 2 respondents they are still worthy of record, due to the small sample size used (N=10). Such themes, can often be seen to be negative contrary to positive themes regarding the same issue (for example, in the question 'how much of your success is due to your own personal efforts?'). In instances such as this, the combined responses support the relevance of the identified themes.

In addition to the demand-control-support factors mentioned above, the findings relating to confidence in ones own ability in contrast to the influence of the institution, or luck relating to success would suggest the value of

employing a measurement of student 'locus of control' (Rotter, 1966) in any assessment of the student experience. Briefly put, locus of control suggests that individuals can be defined as having either an internal or external perception of their world, best regarded as an individual's perception of what causes events which occur in their life.

Those with an internal locus of control can be said to believe that any outcome is due solely to their own actions and they have complete control of their fate. Conversely, those with an external locus of control believe that events are due to fate and nothing they can do will affect the outcome. This would appear a useful tool for the study of student success or dropout, as those with an external locus of control would respond more to the character of the university environment (for example, whether it was nurturant or otherwise), compared to those with an internal locus of control who may be more impervious to such environmental properties. Both of these additional areas of concern will be discussed in greater detail in the following chapter.

Chapter 6: The Effects of Demand, Control and Support and Locus of Control in the University Environment

6.1   The University 'Organisation'

The university is referred to as an 'organisation' as the results of the research conducted up to this point in the investigation have shown the relevance of work values in predicting student estimates of gains from the university environment. In addition to this, the previous chapter has suggested the applicability of Karasek's (1998) Demand, Control, Support theory for the study of student gains and stress when entering the university environment, in addition to the influence of locus of control on how this environment is perceived by the individual. Therefore, the aim of this chapter is to explain the background to the concepts of 'demand, control and support' and 'locus of control', in order to integrate these concepts into the current research. The rationale for this explanation is to create a background on which the findings of the next experimental chapter, which utilizes these concepts, can be based.

At his inauguration at the University of Melbourne in 2001, Professor Craig McInnis stated that 'there has been a notable shift in the juxtaposition of two contrasting values for students, developing a meaningful philosophy of life and being well off financially'. McInnis noted that the two aforementioned values have switched places in student life since the 1960's, with future financial gain now being the top value for 74% of contemporary university students. These findings are not simply specific to Australian students, as in

the 2002 Unite student living report (MORI, 2002), studying the opinions of over 1000 UK students, 90% of students studied believed that the cost of university education was an investment in their future earnings. The opportunity to improve career prospects is now viewed as the best aspect of university life. In the light of these current findings, it would appear rational for students to consider university as part of the trajectory for long-term employment. Higher education can now be viewed as a tool used as a means of training to achieve a desired career and long-term high income. If this is the case, it would also be rational to conceive of the university as an 'organisation', in which the students are 'employees' and hence it could be beneficial and appropriate to use organisational methods to study the student experience within this system. This particular view is highlighted by Cotton, Dollard and de Jonge (2002), who suggested that the university environment is a major part of the rapidly evolving `knowledge economy`. The output of this `university organisation` is the production of new knowledge. There is high competition for top quality students (as there would be for high quality employees) and more likelihood than ever of dissatisfied students moving from one university to another, in a similar way to a dissatisfied employee moving from one company to another.

The pattern of recruitment and turnover at university is characteristic of processes in commercial organisations, identifying a similarity to the `paid work` organisation. Although a very new perspective in the area, it does not stand in isolation. A small number of previous studies have shown relationships between education at all levels and the regular work

environment, such as with primary school children (Leonard, Bourke and Schofield, 2000), secondary school children (Sarndal, 1998) and University students (Winefield, 1993). From this past research, it is possible to liken student work to regular work in terms of organisational hierarchy, well defined job tasks, the setting (and meeting) of deadlines and the dependence of progress on task performance.

6.2 Demand, Control, Support Theory and Student Stress

As was discussed in Chapter 1, the focus of university education in current individual terms has changed to one in which the `student experience` encompasses not only the academic and social experience of university, but also the financial pressures which accompany entry into the university environment. With this, interest has grown regarding those vulnerable to the resultant stress this situation may cause and consequential dropout rates.

It has been suggested that principles of Job Stress Theory (Cotton et al, 2002), could be used in a University environment as a means of improving the working environment in order to reduce stress experienced, increase satisfaction and ultimately improve performance. In order to do this, (Cotton et al, 2002) used the Demand – Control – Support (DCS) model, designed by Karasek & Theorell, (1990). This theory postulates that there are three main characteristics of work which can be seen as central in predicting worker health, productivity and satisfaction / motivation. These three main characteristics can be classified as job demand, job control and social

support (Karasek, 1998). Job demands can be thought of as deadlines to be met, degree of task co-ordination and of cognitive effort. Control includes the degree of decision latitude or autonomy the individual has as a part of their job (Karasek, 1998) and support can be suggested to be the sum of the support received, in terms of social interaction and support from both peers and superiors, and the availability of help with tasks when needed.

According to DCS theory, a work environment which combines high demands with low control and / or low support has been found to result in the highest risk of cardiovascular problems (Theorell & Karasek, 1996). Karasek (1998), suggested that job control and social support can be seen as moderators of the effects of work demands on employee well-being, satisfaction and resultant performance, with the most productive environment being one with high demands and high control. Cotton et al, (2002), postulated that, if this demand – control relationship were the case, then students would benefit from flexibly delivered, self-paced programs, resulting in far more `active learning` and personal growth whilst at university.

However, although there is an obvious link between the work environment, satisfaction and well-being, how does this then result in higher (student) performance? There may be some optimal levels of stress needed to motivate cognitive performance (according to the Yerkes-Dodson Law, 1908) but in general, high levels of stress result in a decrease in performance regarding concentration and memory (Fisher, 1994) and so

the smaller the amount of stress experienced , the higher the level of performance. Indeed, it has also been found that well-being can predict not only present, but future performance (Daniels & Harris, 2000). Therefore, it would appear that the less stress an individual experiences, the more she/he feels capable of and the more likely to live up to his/her potential.

Considering the evidence previously mentioned, Cotton et al, (2002) used the DCS model to examine the effects of demand, control and support experienced by students at university and the mediating effects of stress (or conversely, well-being) and satisfaction on subsequent performance. To do this they developed a model which can be seen in figure 6.1:
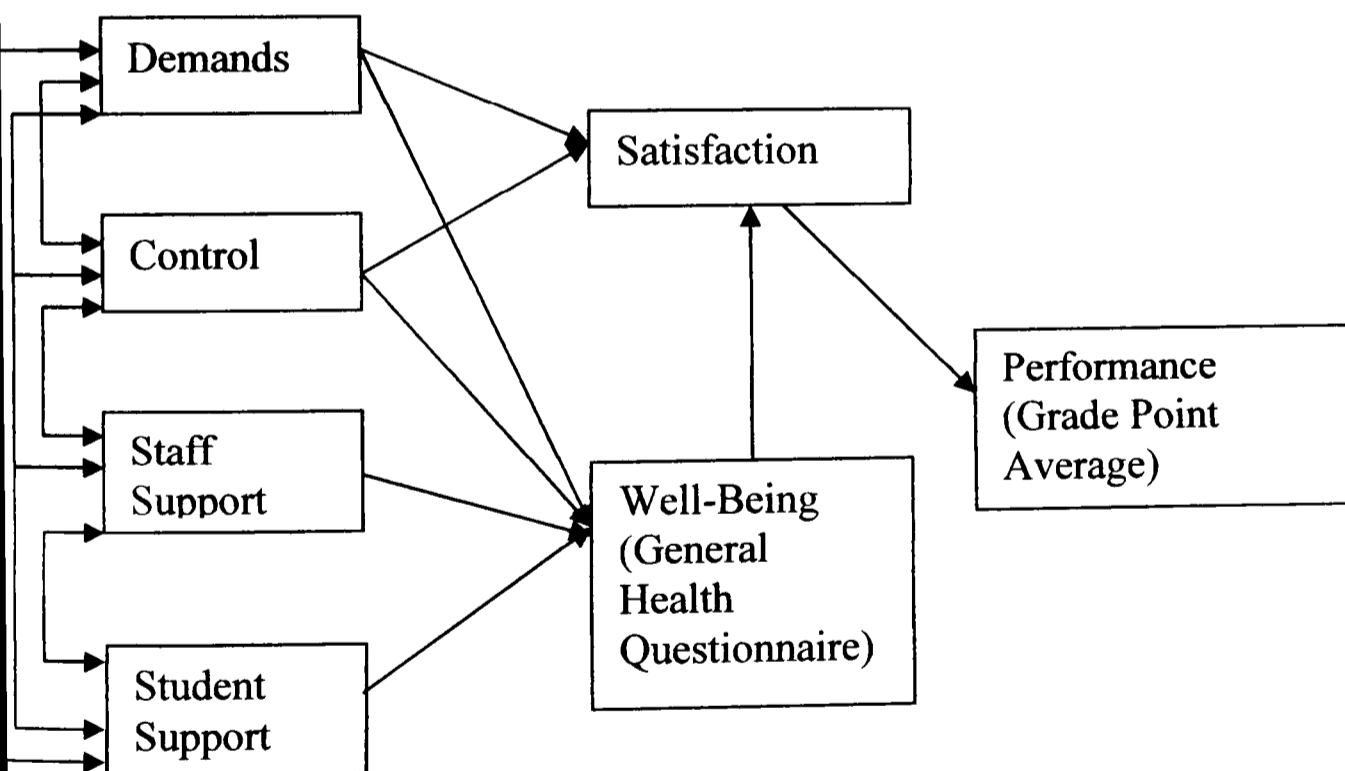
Figure 6.1: The model of job characteristics, psychological outcomes and performance in university students, as developed by Cotton, Dollard & de Jonge (2002).

Cotton et al (2002), used their amended DCS model to examine the students' perception of control and the corresponding relationship to stress and performance (Hypothesis 1) and the moderating effects of control and/or support on the relationship between stress and satisfaction (Hypothesis 2).

The results of this study, as can be seen in figure 6.1, found a number of links, which showed that factors involved in the level of psychological distress in university students was similar to that in the work environment, in terms of high work pressure, low control and low support from other students. Similar links were also found regarding satisfaction and work design, in that high satisfaction was found in situations of low demand and high control. It was also found that support from other students was only significant in reducing psychological distress but not increasing performance, but this still suggests that improved support is beneficial in maintaining university student well-being. Also, evidence was found for an additive effect of demands, control and support on predicting student performance, consistent with research in the paid work environment, such as Dollard and Winefield (1998). Job satisfaction was also found to link directly with demands and control but not with support, suggesting support to be more important solely for the maintenance of psychological well-being. This finding in particular would appear to support findings regarding the effects of mastery of one's environment on well-being. However, one area which would seem to be of particular relevance in this situation, which was not identified by this investigation, was that the study did not examine the

effects of the individual's personality factors in relation to mastery of one's environment. An example of addressing the area of individual personality factors on psychological well-being can be seen in a study by Felsten and Wilcox (1992). Felsten et al (1992), suggested that, 'many of the personality factors shown to reduce the effects of stress on well-being share the capacity to provide a sense of mastery over the environment.' This concept of mastery of one's environment relates to the idea of 'locus of control'.

6.3 The Influence of Locus of Control

Rotter's (1966) theory of locus of control essentially postulates that individuals can be defined as having either an internal or external perception of mastery of their lives. It can be best regarded as an individual's perception of what are the main causes of events, which occur in his/her life. Surely, if a situation is to be investigated regarding the effects of demand, control and support on stress and satisfaction, the individual's perception of level and locus of control of their environment would have a major impact.

Those with an internal locus of control can be said, at the most extreme extent, to believe that any outcome is due solely to their own actions and they have complete control of their fate. Conversely, those with an external locus of control believe that events are due to fate and nothing they can do will affect the outcome. Locus of control theory was originally named 'Locus of Control of Reinforcements' as it bridges both behavioural and cognitive

disciplines of psychology. Rotter (1966) originally believed that behaviour was mainly a result of reward and punishment and it is through these reinforcements that individuals develop their beliefs about what causes the outcome of their actions, in turn guiding the attitudes and behaviours people choose to adopt. An individual's locus of control belief about themselves can be referred to as an attribution, as it is a means for an individual to explain events that happen to themselves and others. In the particular case of locus of control, individuals can be seen as making four main attributions with regard to internality-externality. Firstly, there are internal attributions about themselves when they succeed, for example, 'I did it myself'. Secondly, there are internal attributions about others when they fail, for example, 'It was their fault'. Thirdly, there are external attributions about themselves when they fail, for example, 'Something else made me fail'. Lastly, there are external attributions about others when they succeed, for example, 'They got lucky'. Put simply, a greater degree of internal locus of control is usually seen as a more desirable state than an external locus of control because it facilitates the individuals control over their environment and allows them to believe that anything may be possible (at an extreme level) due to their own efforts.

A number of characteristics have been attributed to internality, for example, research by Mamlin, Harris and case (2001) suggest that males tend to be more internal than females, people become more internal with age and those with an internal locus of control tend to achieve higher positions in organisational hierarchies. As regards reasons for this to occur, culture has been suggested to play a part in the development of the individual's locus of

control (eg. Rotter, 1966), with the fact that males being found to be more internal reflecting a patriarchal culture. Also, as the individual ages, they have greater experience of and opportunity for their influence on outcomes of their chosen goals. In addition, internals in an organisation see rewards as due to their own actions and are hence motivated to work harder to achieve these rewards.

The generally perceived benefits of an internal locus of control have led to the development of a number of psychological and educational interventions, found to produce long-term perceived control shifts toward that of a more internal locus of control, such as outdoor education programs (Hans, 2000; Hattie, Marsh, Neil & Richards, 1997). However, although the aforementioned would lead one to believe an internal locus of control to be the more advantageous attribution, overly internal people, particularly those with lower confidence in their abilities, could face a higher danger of becoming neurotic, anxious and depressed. Nonetheless, measures of mastery have shown that a higher degree of mastery can lead to direct stress-buffering effects (Nezu & Ronan, 1988).

Similar studies have also reported an interaction of social support and mastery beliefs, whereby social support has been found to act as a stress buffer in those with an internal but not those with an external locus of control. (Sandler and Lakey, 1982). In addition, it has been suggested that those with an internal locus of control use support better, have more effective strategies of gathering information and use more task-orientated

coping behaviours than those with an external locus of control, (Lefcourt, Martin & Saleh, 1984). Of particular interest for the present investigation, in one study by Abouserie (1994), a highly significant relationship was found between academic stress and students' locus of control, suggesting that students with an external locus of control experience far more stress during university study than those with an internal locus of control. Abouserie (1994) suggests that this can be translated that students who have belief in their abilities, experience less stress. This raises the question of whether externally controlled students, if identified, could be helped to change their locus of control towards increased internality through counselling. Conversely, if a student's environment reduces the amount of control they have over their environment for a prolonged period of time, they could develop an external locus of control as an adaptive response. However, this can easily lead to a state of 'learned helplessness' (Seligman, 1975). In this state of learned helplessness, an individual will keep this learned external locus of control, even when the situation has changed to one of a more advantageous nature. Theories and findings such as these would certainly suggest therefore that it may be worthwhile to examine the mediating effects of the individual's locus of control on the relationship between demand, control and support and stress and satisfaction in higher education.

6.4 Meeting More Than One Set of Demands

All of the studies mentioned earlier in sections 6.2 and 6.3 help to illustrate how both the work environment and the personality characteristics of the

individual contribute to coping with the stress of study in a university environment. However, this view omits another essential consideration: that regarding not only the academic workload experienced by students, but also the additional high demand, low pay, low status workload outside of university that is a common additional requirement of the university experience.

When examining the student workload in terms of the DCS model, one must consider that the student experiences two sets of each factor in this model. Whereby the typical worker can be said to experience the demands from their work situation which are in turn moderated by the level of control they have (and perceive) and the level of support they receive, for those in higher education these demands are often doubled and are most often contrasting, as students often work outside as well as inside universities. A contributing factor to problems which may occur due to this duality stems from the fact students rarely perform additional part-time work which is actually related to their study (Leonard, 1995; Watts, 2002). As Leonard (1995), suggests, the priority given to each 'workload' varies according to the highest demands from each at any given time. In effect, the student is not only investing in the future but also in the present at the same moment in time. Therefore it would seem more appropriate when using the DCS model as a means of studying student stress, to consider a comparison of those who do and do not have to perform additional part-time work in terms of their stress and satisfaction and resultant performance.

6.5 Amending the Demand, Control Support model for the study of the student experience.

Furthermore, when studying student workers, in addition to considering external workload or hours, it would also seem beneficial to include locus of control as a mediating variable between the DCS variables, satisfaction and stress. For the reasons outlined in section 6.3, this would take into account the effects of the students perceptions regarding the extent to which mastery beliefs mediate the influence of the demands, control and support from the academic environment. This amended model can be seen in figure 6.2.
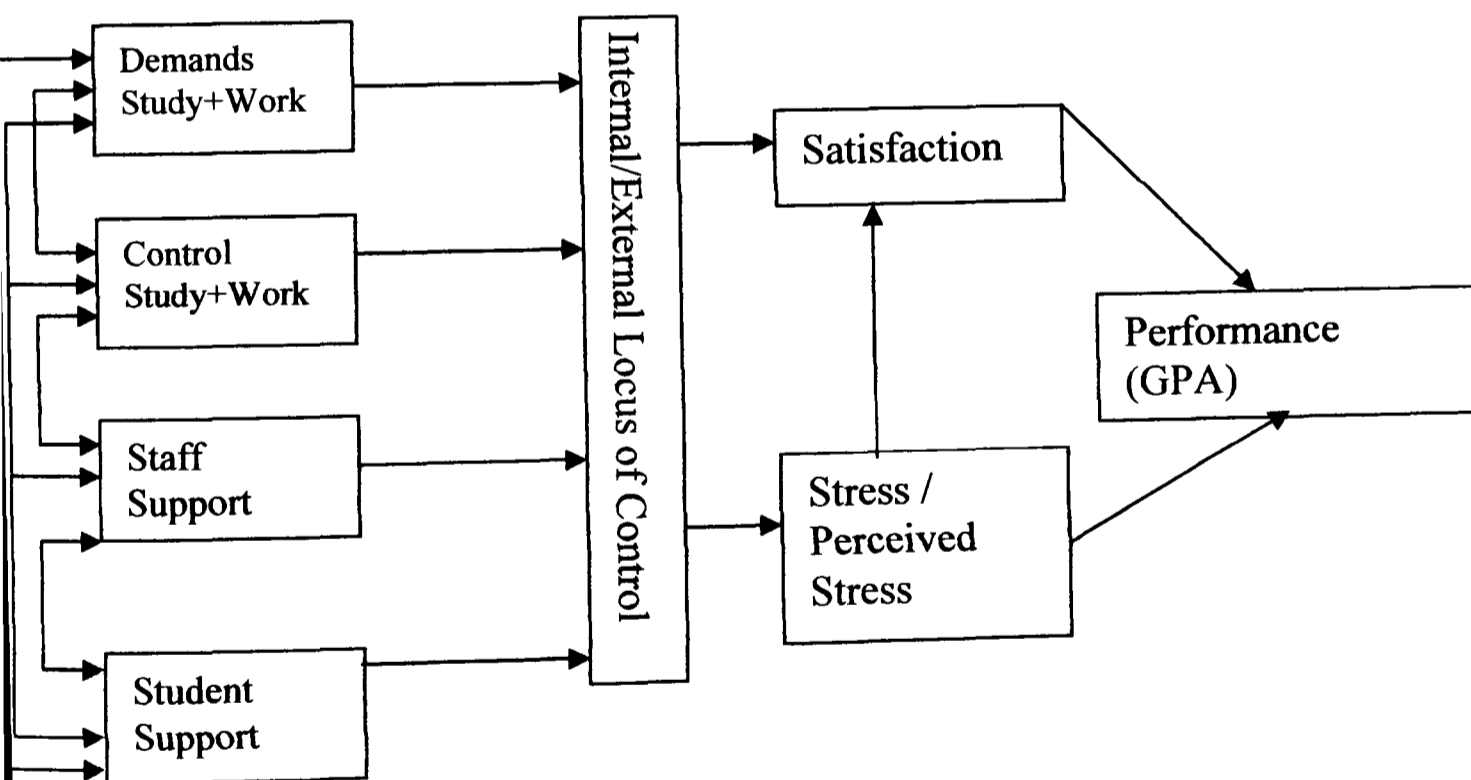
Figure 6.2: Amended DCS mode to incorporate locus of control and additional part-time work.

A further important amendment to the original model is to not assess just the occurrence of stress but to assess this against the individuals'

perception of their level of stress. Fauvel (2002), suggested that the (cardiovascular) impact of stress depends not only on the person's reactivity to the stressful situation, but primarily on the individuals perception. Causes of psychological stress may be first filtered by cognitive appraisal mechanisms before causing a biological response. The result of this is that the same stressor can have quite different effects on different individuals. Individuals may have low perception of stress but nonetheless be experiencing higher biological stress or in contrast, other individuals may perceive that they are under stress while there is little physiological evidence of this. The use of a measure of perceived stress in addition to one of biological stress would thus aim to highlight the extent to which the stress response experienced is conscious or unconscious. It is for this reason that it is beneficial in a study such as this one to examine both perceived and biological stress. If the nature of these differences in stress can be identified as a recognisable occurrence in an identifiable group of the student population, this would have quite significant implications for university support staff in terms of stress management counselling. Thus this dual approach was adopted in the next study in this investigation.

Chapter 7: The Influence of Work Values and Demographics on Student Stress and Estimated Gains From the University Environment: Replication Including Locus of Control and Demand, Control and Support Measures

7.1 Summary of Study 1

When originally examining the effects of values and demographics on student stress at commencement of university study in study 1 (chapter 4), it was found that intrinsic values, in regard to achievement, advancement and personal development, were the best predictors of high estimated gains from the student experience, with the exception of general education and personal development gains. This appeared to support previous research regarding task-specific, intrinsic goals (Schmuck et al 1999; Conti, 2001). In addition, there were small gender differences, with males found to perceive greater gains in terms of intellectual skills and significantly higher estimated gains in total than females. Also, those working less than 4 hours were found to believe they would gain greater personal development and had higher estimated gains in total than those working more than 16 hours weekly.

As regards stress, it was found that 18 year olds suffered significantly greater perceived stress than those above 18 years of age and in particular, females experienced greater levels than males.

These results suggested that values did have some influence on student perceptions when entering university. However, qualitative analysis of interviews developed from open-response questions during this first round of testing, suggested that it would be beneficial to look more closely at both intrinsic differences in the student perceptions and extrinsic student perceptions of the extrinsic university environment.

7.2 Aims of Study 3

This third study aimed to investigate the influence of (a) student demographics (fees, debt, income, place of residence (university halls / house, private rented, lodgings, own property, with parents, other), expenditure (accommodation, bills, food, alcohol and other expenses) and hours of work), (b)values, (c) locus of control and (d) perceived demands, control and support, on the (1) estimated gains and (2) stress of students when entering university.

Therefore, this study replicates the approach of study 1, using the same measures in the same format in regard to investigating the influence of values and demographics on the estimated gains and stress of students within the first month of entering university. However, in addition, on the basis of the findings of interviews carried out in study 2, chapter 5, additional measures have been added to find any influence of locus of control and perceived levels of demands, control and stress on estimated

gains and stress. This is due to findings in study 2, suggesting high influence of internal/external locus of control and perceived levels of demands, control and support on estimated gains and levels of stress at commencement of the student experience from student interview responses.

7.3 Method

7.3.1) Participants and Design

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
age	133	0	49	21.58	6.34
debt2	133	0	11	4.30	2.958
wkinthrs	133	0	38	9.57	7.63
Valid N (listwise)	131				

Table 7.3.1 Descriptive statistics for additional demographic independent variables

One hundred and thirty three (Male = 52, Female = 81, mean age = 21.58 years, SD = 6.34) first year undergraduates from the University of Gloucestershire served as participants in return for the chance to win a prize as an incentive. The experimental design used was a cross-sectional design.

7.3.2.1) Materials- Independent Variables

7.3.2.1a) Work Values

For the assessment of work values, the study operationalized items from 'The Values Scale' (Mcnab, Fitzsimmons & Casserly, 1986, see Appendix B), as in study 1, chapter 4. (For reliability / validity information, please see chapter 4)

7.3.2.1b) Demographics

In addition to the assessment of work values, the study also looked at a range of student demographics which included age, gender, debt and performance of work in addition to study. This was operationalized through the use of open response items, for example, 'Age:_____' and multiple choice items, for example, 'Gender: Male/Female'. This then allowed a direct method of categorisation and comparison between groups.

In addition to replicating the tests described above, used in study 1, chapter 4, interview data suggested that further analysis was needed regarding intrinsic and extrinsic features of the student experiencing university and their effects on estimated gains and perceived stress. This was investigated by examining internal/external locus of control and the students' perception of the demands, control and support when commencing their university study. These were as follows:

7.3.2.1c) Locus of Control

For assessment of locus of control, the 24 item Achievement scale of the Multidimensional-Multiattributional Causality Scale (Lefcourt, von Baeyer, Ware and Cox, 1979) was employed. This scale was employed as it was specifically designed as a development of Rotter's (1966) I – E scale, for use with students, (Lefcourt et al, 1985). In this scale, 24 questions relating to internal and external locus of contol items are asked, with responses being divided into questions relating to ability, effort, context and luck. For example, 'Some of my lower grades have seemed to be partially due to bad breaks'. The responses are rated on a Likert scale, (0, disagree; 4, agree). Higher scores therefore indicating greater importance. (See Appendix B).

7.3.2.1d) Influence of the Demand, Control / Support Model

For assessment of the perception of demand, control / support, the measures used were 3, 9-item subscales of the work environment scale (WES), (Moos, 1986) a total of 27 items. This is due to widespread use of this measure in a wide range of studies (eg. Dollard, Dollard, Winefield and de Jonge, 2000). The subscales used in this study were those relating to work pressure (demands), autonomy (control) and peer cohesion (support). For example 'you can take it easy and still get your work done'.

The responses to these questions were rated on a true / false basis. (See AppendixB)

Reliability

Studies using Cronbach's Alpha have found that Alpha coefficients for subscales of the WES are in the range from 0.69 to 0.86 (N = 1045).

Validity

As regards reliability, many subscale correlations have been found with a number of similar instruments such as the TBWS

For a table of the variables used in this round of analysis, please see table 7.1.

7.3.2.2) Materials – Dependent Variables

7.3.2.2a) Stress

For the assessment of stress, the Perceived Stress Scale, `PSS` (Cohen, Kamarck & Mermelstein, 1983, see Appendix), was employed to assess changes in student stress as the most widely used psychological instrument for measuring the perception of stress, (Cohen, 1994), as in

study 1, chapter 4. (For reliability / validity information, please see chapter 4)

7.3.2.2b) Estimated Gains from University

For the assessment of estimated gains, the College Student Experiences Questionnaire, `CSEQ` (Kuh 1999, Pace & Kuh 1998), was employed. This scale is employed due to the past history of successful use of this test in the US, (eg, Bauer, K. W., 1992). The Estimate of Gains scale employed in this study, is a subscale of the CSEQ (see Appendix), assessing perceived progress toward important educational goals, as in study 1, chapter 4. (For reliability / validity information, please see chapter 4)

Independent Variables	Dependent Variables
A) Work Values	A) Estimated Gains
1)Ability	1)General Education
2)Achievement	2)Vocational Preparation
3)Advancement	3)Personal Development
4)Autonomy	4)Science and Technology
5)Economics	5)Intellectual Skills
6)Personal Development	B) Perceived Stress
7)Prestige	
8)Social Interaction	
B) Demographics	
1)Gender	
2)Age	
3)Number of Hours Worked	
4)Financial Situation	
C) Locus of Control	
D) Perceived Demands, Contr〈 and Support	

Table 7.1:Table of Variables in Study 3

7.3.3) Procedure

The procedure for this study involved recruiting, as in study 1, during the first term of university, a random sample of student participants from a range of undergraduate subjects, so as to gain as much variety as possible. Due to more limited access than the previous year, this was achieved by subject tutors distributing 300 questionnaires during induction lectures and asking students to complete them while present, to ensure as high response as possible. If this caused class disruption, they were asked to return the questionnaires within two weeks, as in the first round of testing. This resulted in the very acceptable return of 133 questionnaires (44.3%). The initial intention was to conduct a replication with the same cohort of students as for Study 1 in a longitudinal approach. However it was not possible to perform this longitudinal analysis for two reasons. Firstly there was an overall failure by participants from the first round of testing to reply to email requests to take part in a second round of testing. To overcome this problem, help was promised from university administration but was not able to be honoured apparently for reasons of records confidentiality. To overcome this impediment, the design of the third study (second stage of questionnaire testing) involved studying a similarly representative sample of first year University of Gloucestershire students.

In this second wave of testing, student numbers were requested in order to form a key for any follow-up. Once this key has been compiled, all

student numbers were removed and replaced by an unrelated code as a means of identification.

7.4 Results

7.4.1) Work Values, Estimated Gains and Stress

As for study 1, in order to predict estimated gains (personal development, science and technology, general education, intellectual skills and vocational preparation) and stress with criterion variables of student work values (ability utilization, achievement, advancement, autonomy, economic, personal development, prestige and social interaction), a series of multiple regression analyses were performed.

7.4.1.1) Influence of Work Values on Total Estimate of Gains

A multiple regression analysis was used to assess total student estimation of gains from university (n = 131), with predictor variables of student work values. Regression analysis indicated that the values of autonomy (β = .203, p < .05) and economics (β = .224, p < .01) were significant predictors of gains (R^2 = .28). Other variables in this model were not significant predictions of estimated gains when entering university.

The following analyses assess the influence of values on each particular estimated gain in turn:

7.4.1.2) Influence of Work Values on Estimation of Personal Development Gains

A multiple regression analysis was used to assess student estimation of personal development gains from university (n = 131), with predictor variables of student work values. Regression analysis indicated that the value of social interaction (β = .203, p < .05) was the only significant predictor of personal gains (R^2 = .145). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated personal development gains from university is social interaction value.

7.4.1.3) Influence of Work Values on Estimation of Science and Technology Gains

A multiple regression analysis was used to predict student estimation of science and technology gains from university (n = 131), with independent variables of student work values. Regression analysis indicated that no values were significant predictors of science and technology gains

7.4.1.4) Influence of Work Values on Estimation of General Education Gains

A multiple regression analysis was used to predict student estimation of general education gains from university (n = 131), with independent variables of student work values. Regression analysis indicated that the value of economics (β = .297, p < .04) was the only significant predictor of general education gains (R^2 = .146). Other variables in this model were not significant. This suggests that among all the variables included in this model, the most important predictor for high estimated general education gains from university are high economic values.

7.4.1.5) Influence of Work Values on Estimation of Intellectual Skill Gains

A multiple regression analysis was used to predict student estimation of intellectual skill gains from university (n = 131), with independent variables of student work values. Regression analysis indicated that the values of autonomy (β = .33, p < .02) and economics (β = .33, p < .01) were significant predictors of intellectual skill gains (R^2 = .306). Other variables in this model were not significant.

7.4.1.6) Influence of Work Values on Estimation of Vocational Preparation Gains

A multiple regression analysis was used to predict student estimation of vocational preparation gains from university (n = 131), with independent variables of student work values. Regression analysis indicated that the values of autonomy (β = .247, p < .01) and economics (β = .158, p < .05) were significant predictors of intellectual skill gains (R^2 = .215). Other variables in this model were not significant.

7.4.2) Influence of Work Values on Perceived Stress

In order to assess the effects of values on the second dependent variable, a multiple regression analysis was used to predict student perceived stress at university, with independent variables of student work values. Regression analysis indicated that there was no significant effect of values on perceived stress (p>.05).

7.4.3) Demographics, Estimated Gains and Stress

In order to quantitatively test the influence of differences in student demographics on estimated gains and stress, the independent samples t-test and anova was used. These tests were deemed the most appropriate due to the categorical nature of the demographics. The aim of these

analyses was to examine the influence of the independent variable of student demographics on differences within the dependent variables of estimated gains and stress. Due to the small sizes of many of the data sets collected, the demographics studied were those relating to differences in gender, age, whether the student studied full-time or part-time and financial situation. This method of analysis was performed using the SPSS statistical package.

The analyses gave the statistically significant results for the effect of the demographic of hours of work and gains. The other demographics did not yield significant outcomes and hours of work had no significant effect regarding perceived stress. The significant effects were as follows:

7.4.3.1) Hours of work and gains

A one-way between-groups ANOVA was conducted to explore the impact of hours of work on a total score of gains. Due to the data for total gains being slightly positively skewed, the square root was used, as this gave a normal distribution. Subjects were divided into three groups, (0-8, 8.1-15, and above 15 hours worked). A statistically significant difference was found, $F_{(2, 185)} = 3.71$, $p < .04$, between the three groups. Post-hoc analysis using Scheffe's test indicated that a significant difference existed between the means of the 0-8 (M = 6.48) and above 15 (M = 6.81) hours of work groups,

p < .05. In other words, there was a significantly higher total gains expectation for the group working the longest hours.

7.4.3.2) Hours of work and gains sub-scales

A one-way between-groups ANOVA was conducted to explore the impact of differences in hours of work on each of the gains sub-scales. A significant difference was found for the sub-scales of personal development gains and intellectual skill gains. The other analyses were not significant ($\alpha = .05$)

7.4.3.3) Hours of work and personal development gains

A one-way between-groups ANOVA was conducted to explore the impact of hours of work on personal development gains. Subjects were divided into three groups, (0-8, 8.1-15, and 15 and above hours worked). A statistically significant difference was found, $F (2, 195) = 4.36$, $p < .02$. Post-hoc analysis using Scheffe's test indicated that a significant difference existed between the means of the 0-8 ($M = 10.45$) and above 15 ($M = 11.86$) hours of work groups, ($p < .05$) and between the 8.1-15 ($M = 10.32$) and above 15 ($M = 11.86$) hours of work groups, ($p < .03$). In other words, the group working the longest hours had the highest expectation regarding personal development gains.

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7.4.3.4) Hours of work and intellectual skill gains

A one-way between-groups ANOVA was conducted to explore the impact of hours of work on intellectual skill gains. Subjects were divided into three groups, (0-8, 8.1-15, and above 15 hours worked). A statistically significant difference was found, $F_{(2, 195)} = 5.16$, $p < .01$. Post-hoc analysis using Scheffe's test indicated that a significant difference existed between the means of the 0-8 (M = 9.48) and above 15 (M = 11.14) hours of work groups, $p < .01$. That is, the longer hours group once more had a higher estimate of intellectual skill gains.

7.4.4) Influence of Demands, Control and Support on Stress

Although demographics were found to have no significant effect on stress, there were significant outcomes in regard to the links between perceived Demands, Control and Support and Locus of Control variables on Perceived Stress. For these analyses, Pearson's r was used because the interest in this instance was in exploring the strength of the relationship between two continuous variables giving, in this analysis, three pairs of variables being demands and stress, control and stress and support and stress. Both the direction (positive or negative) and the strength of the relationship examined is found from utilizing this test. When examining the effects of the demand, control and support on stress a correlation was found for the influence of demands on stress for the whole group (Pearson's r = .219, p<.05), but no

influence of control or support. In other words, higher stress scores were found for those perceiving higher demands.

In addition, females exhibited responses negatively correlating both control (Pearson's r = -.237, p<.05) and support (Pearson's r = -.259, p<.05) with stress. In other words, in the case of females, lower stress scores were found for those perceiving higher support and higher control.

7.4.5) Interaction effects of Locus of Control and the Demand, Control, Support Model.

When examining the effects of locus of control on the demand, control / support model a correlation was found between locus of control and perception of demands from university for males (Pearson's r = .521, p<.01) but no influence of the perception of control or support. This suggests that those males with an internal locus of control perceive greater demands from the university experience.

7.5 Summary of Results

Although only a weak result was found, those with more *intrinsic* values namely *autonomy*, felt they would gain more in total from their time at university. This was also the case for those with high scores for the *extrinsic*

value of *economics*. Thus expectation of gains can clearly be driven by both *intrinsic* and *extrinsic* values for this sample of students. When the particular gains, namely, *General Education, Vocational Preparation, Personal Development, Science and Technology* and *Intellectual Skills*, were investigated further, it was found that *personal development* gains, in terms of the values studied, were solely influenced by the *extrinsic* value of *social interaction*. This could be taken to mean that, similar to study 1, for students entering this institution, the rewards given from the opinions of others may hold the most importance when judging one's level of *personal development*. For gains involving the development of understanding of *science and technology* no influence of these values was found. In terms of *general education* gains, the only significant work value was that of *economics* as in study 1, an extrinsic factor once again. These 'General Education Gains', may be considered to extend beyond the sphere of academia, a more general life attainment in respect to future welfare. *Intellectual skill* gains were influenced by the *intrinsic* work value of *autonomy*, but equally so, *economics*. This again, as with previous findings from study 1, suggested that those seeking university as a means to advance their careers, see it as a way of increasing not only their knowledge, but also their intellect, but perhaps for greater economic rewards. Thus again, both intrinsic and extrinsic values may influence student expectation of gains from university life.

Finally, in terms of *vocational preparation* gains, the main significant predictor was that of the *intrinsic* value of *autonomy*, possibly once again reflecting the perception of university as one of many factors beyond

education needed to prepare the individual for the world of work and the world in general. However, an additional influence of economics was also found, once again suggesting the importance of higher attainable finances from university education.

Thus again both intrinsic and extrinsic values may influence student expectations of gains, Therefore, to sum up, as with study 1, general education aside, it would appear that both *intrinsic* work values, especially autonomy and *extrinsic* values, especially *economics*, are linked to higher estimated gains from the university environment at the commencement of university study. In this round of testing, *economic* values particularly emerged as predictor of estimated gains, but it is also clear that intrinsic values are important as well.

As regards the negative aspects of the university experience in terms of the stress experienced at commencement, again (as in study 1), it was found that values did not predict the stress experienced by students. However, in this study, the variables relating to Demands, Control and Support and Locus of Control did have links to perceived stress.

When examining the effects of perceived *demands, control and support*, it was found that those who perceived greater *demands* from the university environment had higher perceived *stress*. In addition, females exhibited less *stress* with higher perceived *control and support*. These findings indicate the consideration of student perception of demand, control and

support in regard to the negative stressful aspects of the university experience. It is clear that the reasons why students find university stressful may be better understood by further examination of these factors.

When looking at the influence of *demographics* on student *estimated gains*, once again, as in the previous study (study 1, chapter 4), a difference was found between those working few or no hours a week and those working above fifteen hours a week. These findings were also true for the effect of *hours of work* on individual *gains*, namely, the estimated gains of *personal development* and *intellectual skill* gains. In both of the aforementioned outcomes, students working more than 15 hours a week felt they would gain significantly more than those working less additional hours a week. This would appear to highlight the problem of the necessity to work on the students perceived progress, even before the commencement of study. This result highlights a need to not only develop measures to help students once a problem arises due to their experience of university, but also to develop strategies to help foster intrinsic values, reduce demands and increase support provided by the student help and support available to the new student at the commencement of the university experience.

The relationship amongst perceptions of Demands, Control and Support and Locus of Control and stress would thus seem to be a particularly salient one in understanding the negative aspects of the student experience. The final study in this investigation further explored the negative or stressful

dimension of student life by employing an additional potentially more

sensitive index of stress in the form of student salivary cortisol levels.

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Chapter 8: Study 4: Analysis of Student Perceived Stress and Cortisol Levels In Relation to Locus of Control and Perceived Demands, Control and Support

8.1 Context

Stress is clearly a common aspect of the student experience, however, the appropriate definition and measurement of stress is not a simple matter.

Over the past sixty years of testing, the area of stress research has extended through many different fields, from numerous branches of psychology (Lazarus and Folkman, 1984), anthropology (Sapolsky, 2005), sociology (Aneshensel, 1992). and medicine to name but a few. Due to this wide field of interest, one of the primary problems in stress research is a conceptual one, as there is such wide use in various fields of study. This results in a great deal of confusion due to a lack of common vocabulary, with each area of interest and often each writer defining stress in their own terms. Although the term 'stress' is used throughout the literature, it soon becomes obvious that this term has many meanings, dependent on the approach to the subject. For the concerns of this study, stress will be viewed as a psychobiological entity, as the focus is not simply the psychological (cognitive-emotional) processes and results of stress, but also the biological ones and how both of these interact. The rationale for this approach has a basis in the work on student stress. In recent years, student stress has become of major interest in the field of psychology (for

example, Cotton et al, 2002), yet has relied predominantly on self-report questionnaires, such as the General Health Questionnaire (Goldberg, 1988). Although this has provided a useful perspective on the causes and consequences of student stress, it is by no means conclusive.

8.1.1 Self-Report Methods

Humphrey et al (1998), in a study at Newcastle University, exploring both the physical and mental health of students at the aforementioned institution, developed a 36-point scale from the 12-item General Health Questionnaire. From this, a number of factors were found to be associated with stress, allowing the construction of a multivariate model of student stress. This model explained 25 per cent of the stress experienced whilst at university, suggesting a usefulness of questionnaire data in assessing student stress, but also suggests that there is still more to be learned in this area.

One point in particular to note is that large individual differences to a particular stressor, can best be explained in terms of cognitive mechanisms. In particular, the perception of the situation and its resultant effects on cortisol levels (in this case), as a reflection of the stress experienced *subjectively*. Therefore, the logical method of investigation, in order to explore these subjective responses would be self-report methods. In particular, when looking at how specific or collective situations are

assessed as stressful to a person and to what degree, as in the student experience.

One of the only empirically established *general* questionnaires is the 'Perceived Stress Scale' (Cohen et al, 1983), based on Lazarus's concept of stress appraisal, (Lazarus, 1966), the aim of this being to tap the extent to which an individual finds their lives unpredictable, uncontrollable and overloading.

However, all self-report surveys are susceptible to some response bias. For example, there may be a slight under-reporting of socially undesirable behaviours and a slight over-reporting of behaviours that individuals perceive as socially desirable.

There is much more of a likelihood for subjects to answer honestly if they feel their responses are truly anonymous, if the atmosphere in which the survey is administered is serious and supportive, and if those who administer the survey are knowledgeable about it, believe in its importance, and convey its importance to subjects. However, this still depends upon the perception of the subject. Therefore it is necessary to remain as neutral as possible in the eyes of the participant.

8.1.2 Biological Cortisol Levels and Stress

The measurement of circulating or excreted corticosteroids allows an alternative representation of what affects adrenocorticol activity, responsible for eliciting many changes in neurochemical and metabolic processes during stress. Corticosteroids are secreted during and after exposure to some stressors, as part of the systematic arousal of the hypothalamic-pituitary-adrenocortical axis, initiated by release of corticotropic releasing hormone (CRH) by the hypothalamus. CRH stimulates the pituitary to produce adrenocorticotropic hormone (ACTH), which in turn elicits corticosteroid release from the adrenals. Stress increases this production and larger quantities of primarily glucocorticoids are released in bursts. This one view has been expanded over the years to suggest how this may reflect specific emotional responses to situations, rather than simply as a measure of arousal (Hennessy and Levine (1979), Mason (1975), Sgoifo (2003).

As highlighted in chapter 3, the advantages of the use of saliva as a measure of cortisol are that cortisol samples can be collected with greater ease and without the additional stress caused by invasory methods of the taking of blood samples and do not require medical staff for data collection. Saliva-based cortisol measures offer opportunity to assess cortisol without the reactivity, practical restraints and ethical problems inherent in these other methods of testing, (Kirschbaum and Hellhammer,

1989). One problem, which must to be considered in this method of testing is the reduction in salivary flow rate caused by stress, which can alter the concentrations of substances found in saliva. However, due to the high lipid solubility of cortisol, it can diffuse easily through cell membranes and into saliva, resulting little or no effect on cortisol levels from salivary flow on levels present (Vining and McGinley, 1984). In addition, correlations exceeding .9 are consistently reported between salivary cortisol and previous measures of blood cortisol, showing they are accurate reflections of each other, (Kirschbaum and Hellhammer, 1989).

However, as mentioned in chapter 3, absolute levels of cortisol have been found to be around half as much in saliva samples as in blood samples and in some cases may vary considerably, (Kirschbaum and Hellhammer, 1989) and thus a certain amount of caution must be used in the interpretation of the results. However, the combination of self-report questionnaire and cortisol measurement, allows the investigation of not only how stressed the person feels they are subjectively, but also a more objective measure of the physical response they have to stress.

8.1.3 The Influence of Locus of Control

It is this translation of the situation regarding stress, from the psychological to the physical, which has received very little attention in research, particularly when examining the extent to which personal control

is a factor, in terms of the control subjects perceive they have in a given situation and if this is attributed to internal or external factors. In one study, discussed in chapter 6, Abouserie (1994) found an extremely significant relationship between perceived academic stress and students' locus of control, suggesting that students with an external locus of control experience far more perceived stress during university study than those with an internal locus of control. Abouserie (1994) suggests that this can be translated that students who have belief in their abilities, experience less perceived stress. In addition, a study was conducted by Bollini et al (2003) to examine the influence of perceived control on the biological and subjective stress responses and the potential moderating effects of locus of control on this relationship. The results of this investigation suggested that locus of control acted as a moderator between subjective control and cortisol, with those having more of an internal locus of control perceiving themselves to have greater control over the stressor, showing a reduced cortisol response in the perceived control condition.

8.1.4 Integration of Methods

Evidence such as that mentioned above reflects the value of adopting both self-report and biological methods in exploring the experience of stress. The initial study in this investigation employed self-report measures and now this experiment will add to this by using biological indicators of stress.

8.2 Rationale

It is at this point that it may be useful to consider this student situational stress response from an organisational psychology perspective, if the university is viewed as the organisation in which students are a primary working population. This model will enable the exploration of (a) the students' level of internal/external locus of control they have regarding the outcome of their time at university and (b) the level of demands, control and support that will be given to them from the university environment, in addition to (c) demographic differences, result in variation in the level of stress they experience, both (1) perceived and (2) biological. This is a development of the previous study, which, in particular, found that those who perceived greater *demands* from the university environment had higher perceived *stress*, with females exhibiting less *stress* with higher perceived *control and support*.

The rationale for this perspective comes from recent research, which suggests that stress should be viewed as relational in nature (e.g. Dewe; 1992, Folkman & Lazarus, 1985; Lazarus, 1999), in that it involves a transaction between the individual and the environment. A number of studies by Lazarus (Folman & Lazarus, 1985; Holroyd & Lazarus, 1982; Lazarus, 1991; Lazarus, 1999), have suggested that it is the individual's judgement of their ability to cope with the demands that face them which result in the level of stress experienced. Hence this provides grounds for continuing the study of stress in this relational way.

Drach-Zahavy & Erez, (2002) suggest that there are two important interacting processes involved in the appraisal of whether a situation is a threat to a person's well-being, and these can be classed as either primary and secondary appraisals. It is through primary appraisals that the person judges what is at stake, with the significance of the situation being evaluated in terms of an opportunity for growth or as a risk, in this instance, the opportunity to fulfil the educational goals the person holds. Secondary appraisal is concerned with the controllability of the situation. This refers to coping strategies available to manage the demands faced. Essentially, when a person evaluates a situation as an opportunity for self-growth (primary appraisal) and identifies the coping strategies available to manage the demands (secondary appraisal), then stress is perceived in terms of challenge. Conversely, when a person sees the situation as only leading to failure (primary appraisal) and does not have the appropriate coping strategies to manage the demands (secondary appraisal), then stress is perceived in terms of threat. As a result, performance is affected in different ways, whereby challenge enhances performance and threat inhibits performance.

In this study, this would mean that those with an internal locus of control, who perceive the situation as one of high control, would have lower levels of perceived stress and lower cortisol levels, as the control would result in effective coping and lower stress. Likewise, those with an internal locus of control, who perceive the situation as one of low control, would have higher levels of perceived stress and higher cortisol levels, as the lack of

control would result in ineffective coping and higher stress levels. Alternatively, those with an external locus of control, who perceive the situation as one of high support, would have lower levels of perceived stress and lower cortisol levels, as the support would result in more effective coping and lower stress. Likewise, those with an external locus of control, who perceive the situation as one of low support, would have higher levels of perceived stress and higher cortisol levels, as the lack of support would result in ineffective coping and higher stress levels.

8.3 Aims of Study 4

Bearing the above interactive viewpoint in mind, the aim of this study is to investigate the effects of demographic situational stressors (e.g. work and debt) and perceptions of demand, control and support at university on student stress levels, both perceived and biological. In addition, a secondary aim is to explore any interaction of locus of control and the perceptions of demand, control and support at university and student stress levels, both perceived and biological, suggesting that the former (locus of control) may have a mediating effect in regard to the experience of stress. As the focus of this round of testing was on the influence of perceived demands, control and support from the university environment and locus of control on differences in perceived and biological stress and previous studies had shown no effect of values on stress, values were not studied in this round of testing.

8.4 Method

8.4.1 Participants and Design

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
age	20	18	39	24.20	6.830
debt2	20	0	17	5.777	6.019
wkinthrs	20	0	20	8.38	6.749
Valid N (listwise)	20				

Table 8.4.1 Descriptive statistics for additional demographic independent variables

Twenty (Male = 1, Female = 19, mean age = 24.20 years, SD = 6.83) first year undergraduates from the University of Gloucestershire served as participants in return for a summary report of their stress levels. The experimental design was a cross-sectional design. The aim of this study was to gain a thorough analysis of the stress experienced by students at the start of their first year of university study, both in terms of perceived and biological stress levels. In addition to this, the aim was to assess the relationship between stress levels and the students' locus of control and their perception of the demands, control and support received at the commencement of university. This was of particular interest regarding age, work in addition to study and level of debt, as these have been a primary focus throughout the study, which have been found to have significant effects relating to student attrition in earlier testing. Due to lack of male volunteers at this round of testing (Male = 1, Female = 19), subject numbers were deemed too small for analysis of gender differences.

8.4.2 Materials

8.4.2.1 Salivary Cortisol

For the assessment of stress from levels of salivary cortisol a salivette was used, subjects were asked to place a cotton swab into their mouth for 30 seconds. This time was needed to gain enough saliva for analysis. Subjects were then asked to complete a short questionnaire (please refer to appendix) relating to perceived demands, control and support, locus of control and perceived stress. The saliva collection was then repeated a second time to allow for any effects of novelty of the situation. Once the samples had been collected, they were taken to a laboratory where qualified staff used radioimmunoassay (RIA) techniques to measure the amount of cortisol in the saliva. All testing was undertaken between 11am and 2pm, as this is the time when cortisol is least variable. In addition, the test for salivary cortisol was performed twice to reduce any effects of novelty on the results. The questionnaire (please refer to the appendix) examined the following:

8.4.2.2 Perceived Stress

As for studies 1 and 3, for the assessment of subjective stress, the Perceived Stress Scale, `PSS` (Cohen, Kamarck & Mermelstein, 1983) was employed to assess changes in student stress as it is the most widely

used psychological instrument for measuring the perception of stress (Cohen 1994). The scale is a measure of the degree to which situations in one's life are appraised as stressful and hence is an ideal as a tool for this study. Items are designed to discover how unpredictable, uncontrollable, and how overloaded, in terms of stress, respondents find their lives to be. The PSS was designed for use with participants with at least a junior school education and therefore is an ideal instrument in an educational setting. Also, the questions are of a general nature to all individuals and therefore avoid the risk of confounding variables, for example age, gender or cultural differences. The questions in the PSS ask about feelings and thoughts during the last month, with respondents being asked how often they felt a certain way. For example, `In the last month, how often have you felt things were going your way`. The responses are rated on a 4 point Likert scale, (0, never; 4, very often). Higher scores therefore indicating greater importance.

8.4.2.3 Locus of Control

For assessment of locus of control, the Achievement scale of the Multidimensional-Multiattributional Causality scale (Lefcourt, von Baeyer, Ware and Cox, 1979) was employed. This scale was employed as it was specifically designed as a development of Rotter's (1966) I – E scale, for use with students, (Lefcourt et al, 1985). In this scale, 24 questions relating to internal and external locus of contol items are asked, with

responses being divided into questions relating to ability, effort, context and luck. For example, 'Some of my lower grades have seemed to be partially due to bad breaks'. The responses are rated on a 4 point Likert scale, (0, disagree; 4, agree), higher scores therefore indicating greater importance.

8.4.2.4 Measurement of Perceived Demand, Control and Support

For assessment of the perception of demand, control / support, the measures used were 9-item subscales of the Work Environment Scale (WES), (Moos, 1986). This is a justifiable choice as there is widespread use of this measure in a diverse range of studies (eg. Dollard, Dollard, Winefield and de Jonge, 2000). The subscales used in this study were those relating to work pressure (demands), autonomy (control) and peer cohesion (support). For example 'you can take it easy and still get your work done'. The responses to these questions were rated on a true / false basis.

8.4.2.5 Demographics

In addition to the assessment of locus of control and demands control and support, the study also looked at a range of student demographics which included age, debt and performance of work in addition to study. This was operationalized through the use of open response items, for example,

'Age:_____' and multiple choice items, for example, 'Are you in Debt?: Yes/No'. This then allowed a direct method of categorisation and comparison between groups.

8.4.3 Procedure

The procedure for this study involved recruiting, during the final term of university, a random sample of student participants from a range of undergraduate subjects, so as to gain as much variety as possible and to reflect the additional stress of end of year exams. This was achieved by entering lectures and asking students to participate and taking contact details to arrange a suitable time for the participants within the testing period, to ensure as high response as possible.

Student identity numbers were requested in order to form a key to ensure anonymity and allow feedback of the stress results to each individual. Once this key was compiled, all student numbers were removed and replaced by an unrelated code as a means of identification.

The procedure for cortisol sampling was to firstly explain how they would be tested and what this would entail. Next, participants were asked to place a cotton swab from a salivette into the mouth for at least 10-20 seconds. After this time, the subject was asked to place this cotton swab into the sterile salivette. This first sample was taken to account for any increases in salivary cortisol due to novelty of the situation. After this had

been completed, participants were asked to complete a short questionnaire, after which, the cortisol sample was taken a second time. Once the salivary cortisol measure was completed, all the coded salivettes were passed to a fully equipped testing facility at Southampton University Hospital.

8.5 Results

The aim of the analyses was to determine the nature and extent of any relationship amongst the stress measures and variables of locus of control, perceptions of demands, control and support and relevant demographics found to have significance in previous rounds of testing, these being age, debt and workload in addition to study. The approach considered to provide the most useful outcomes was to firstly assess the links between each of the stress measures and the scores for locus of control and perceived demands, control and support from the university environment, in a series of pair-wise correlations, using the Pearson product-moment statistic. Then an additional series of Pearson correlations was done to assess correlations amongst locus of control and perceptions of demands, control and support and demographics and resultant moderating effects on perceived and biological indicators of stress.

Firstly, from the results, the means of sample one and two were compared to test for any obvious differences. From this, study one was found to have a mean of 8.2 (n=19, SD=5.37), compared to 6.7 (n=19, SD=2.34) for study 2, suggesting some influence of novelty in sample one. However neither were particularly high and both were found to be within levels reported in previous studies of salivary cortisol, these being around 2-9 mg/dl for the time of sampling (Edwards et al, 2001).

The levels of salivary cortisol found would suggest that, although there may have been a small effect of novelty during the first cortisol sample, this was not high enough to significantly effect the result.

	Salivary Cortisol 1	Salivary Cortisol 2	Perceived Stress Scale
Salivary Cortisol 1 N Pearson Cor.			
Salivary Cortisol 2 N Pearson Cor.	20 .495*		
Perceived Stress Scale N Pearson Cor.	20 .229*	20 .259	

* Correlation is significant at the 0.05 level (2-tailed)

Table 8.5 Correlations between stress measures used

Additionally, the correlation between each of the cortisol scores and the PSS scores was caculated. Contrary to the expected result, there was no correlation between perceived stress and either of the cortisol sample

measures. That is, there was no correlation between perceived and biological stress measures

The significant outcomes from these analyses (α =.05)were as follows:

8.5.1 Correlations between Biological Stress (Cortisol Levels) and Student Perceptions of Demands, Control and Support from the University Environment.

From this analysis, a negative correlation was found between cortisol levels and perception of support at university (Pearson's r = -0.504, p<.05). In other words, higher biological stress (cortisol levels) was associated with a perception of low levels of university support.

8.5.2 Correlation Between Locus of Control and Student Perceptions of Demands, Control and Support from the University Environment.

A negative correlation was also found between external locus of control and perceptions of control at university (Pearson's r = -0.652, p<.01). That is, external locus of control was associated with a perception of low levels of control provided by the university.

The significant outcomes for the analyses involving student demographics are as follows:

8.5.3 Correlation Between Age, Locus of Control and Student Perceptions of Demands, Control and Support from the University Environment.

When examining the effects of age on the relationship between locus of control and the factors in the demand, control / support model, a negative correlation was found between external locus of control and perception of control at university for participants aged 21-30 years of age (Pearson`s r = -.877, p<.01) but no influence of the perception of demand or support. That is, for those students aged 21-30 years of age, an external locus of control is associated with a perception of low levels of control provided by the university.

8.5.4 Correlation Between Debt, Locus of Control and Student Perceptions of Demands, Control and Support from the University Environment and Additional Effect on Stress.

When examining the effects of debt on the relationship between locus of control and the demand, control / support model, a negative correlation was found between external locus of control and perception of control at university for participants experiencing debt (Pearson`s r = -.764, p<.01). Therefore, an external locus of control is associated with a perception of low levels of control provided by the university for those experiencing debt. Also, a correlation was found between external locus of control and perception of demands at university for participants experiencing debt (Pearson`s r = .637, p<.05). Therefore, an external locus of control is

associated with a perception of high levels of demands from the university for those experiencing debt.

In addition to this, a negative correlation was found between perceived stress and perception of control at university for participants experiencing no debt (Pearson's $r = -.940$, $p<.01$). Therefore, higher perceived stress is associated with a perception of low levels of control provided by the university for those not experiencing debt.

8.5.5) Correlation Between Hours of Work, Locus of Control and Student Perceptions of Demands, Control and Support from the University Environment and Additional Effect on Stress.

When examining the effects of hours worked in addition to study on the relationship between locus of control and the demands, control and support, a negative correlation was found between external locus of control and perception of control at university for participants performing additional part-time work (Pearson's $r = -.561$, $p<.05$) Therefore, an external locus of control is associated with a perception of low levels of control provided by the university for those participants performing additional part-time work.

Also of particular note, a negative correlation was found between biological indicators of stress and perception of support at university for

participants who worked in addition to study (Pearson's r = -.561, p<.05). Therefore, higher biological stress is associated with a perception of low levels of support provided by the university for participants who worked in addition to study.

In addition to this, a negative correlation was found between perceived stress and perception of support at university for participants experiencing no additional hours of work (Pearson's r = -.899, p<.05). Therefore, perceived stress is associated with a perception of low levels of support provided by the university for participants who did not work in addition to study.

8.6 Summary of Results

Of particular importance in this study, a negative correlation was found between biological indicators of stress in terms of cortisol levels and perception of support at university. This suggests that, in the first term of study at university, those who felt there was a lack of a suitable support network were actually physically stressed. This situation may be linked to increased risks to health and potentially detrimental effects on performance.

In addition, those perceiving less available control in the situation exhibited a more external locus of control, in particular, those aged 21-30

years of age and in debt. This may be associated with a state of learned helplessness for the individual who may see the outcomes of their time at university as beyond their control and in the hands of the institution.

However, in addition to the above, a positive correlation was also found between external locus of control and perception of demands at university for participants experiencing debt. This suggests that those students in debt view their environment as more demanding, which once again linked to an external locus of control, possibly leading to, or associated with a state of learned helplessness.

These problems are not simply limited to those students experiencing financial hardship. Indeed, the results also found that those students who were not in debt, felt themselves to have low control of their situation and as a result perceived themselves to be under greater stress. Although this was not found for the biological measure in this instance, these findings reinforce the need to consider the link between student stress and perception of available control on the part of the student in the university context.

When assessing additional part-time work, it was found that those performing additional work, perceived lower control of their situation and had a more external locus of control. These 'student workers' also perceived less support and as a result had higher cortisol levels, compared to those who did not work, suggesting the importance for the

university organisation to consider the links between student work hours, perception of control over the university experience available to the student and levels of stress. In addition to this, those who did not work in addition to study were found to have higher levels of perceived stress. This suggests that, while still experiencing high levels of stress, this had not manifested itself at a physical level for these students, possibly due to lower intensity and volume of total workload than those working in addition to study.

Therefore, these results reveal the important links between student stress and perception of control, demands and support in the university environment. The fact that for some students such stress is manifested in biological terms is cause for concern. These results point to areas that are potentially critical for the university in addressing negative aspects of the student experience.

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Chapter 9: Discussion

9.1 Aims of the Thesis

The broad aim of this thesis was to identify factors at the commencement of university study that may be implicated in the positive and negative aspects of the student experience and hence may be central to subsequent success or failure. The particular concern was with individual differences in regard to (a) student work values, (b) finances and other demographic variables, (c) perceptions of the degree of demands, control and support experienced from the university environment and (d) student locus of control.

The thesis aimed to explore the link between these variables and student estimate of the gains available from the university experience and conversely, student perception and experience of stress within the university experience. In summary, the aim of the thesis was to identify individual differences amongst students that linked to student perceptions of the positive and negative aspects of student life. Unfortunately, there was no opportunity to further assess how these initial perceptions related to actual student success or failure. Nonetheless, the thesis aimed to provide insights into student views and responses that are central to the student experience and hence would seem highly likely to affect student progress. In this regard, the thesis served a broader aim of providing information for student support services that may help to identify at first contact, those students most at risk of non-completion of their studies.

The initial focus was on student work values and the link between these and student estimate of gains from university study and conversely of stress perceived from university life. The rationale for this was that it had been proposed (Austin, 1998) that there has been a recent change in student values from 'developing a meaningful philosophy of life' to 'being well off financially'. This view suggests that university is viewed by the modern student as part of a career path, far more now than ever and in effect can be viewed as a part of the students 'job', albeit an unpaid part of it. Bearing this viewpoint in mind, it was thought of as pertinent to examine which intrinsically or extrinsically based values would result in stronger goals in terms of what the student believed they would gain from their actual time at university. It was felt that this would provide a good insight towards helping the student to not only stay at university, but also improve their chances of achievement during the 'student experience'.

In addition to the work values held by the students, the additional independent variables that were examined were student finances and demographics. The reason for this was as a follow-up of a study at the University of Gloucestershire by Barker (2001), which found differences between males and females, student workers and students of different ages in regard to the stress they experienced whilst at university and in particular, the influence of finances on the level of stress. However, this earlier study relied on comparisons of frequency data alone. Therefore, this research hoped to examine similar groups to those in the Barker (2000-1)

study and resultant influences on and differences in stress and risk of attrition, but in addition hoped to find differences in these independent variables regarding more positive factors of estimated gains from university. It was hoped that this would not only highlight those most at risk of leaving but also those with a greater motivation to succeed within the university environment.

In addition to student values, finances and demographics, student judgements or perceptions regarding the degree of demands, support and control in the university environment were also studied. The area of 'control' was also further assessed in terms of student 'locus of control'.

All of these variables (ie, work values, finances, demographics, demands, control, support and locus of control) were examined as potential indicators of the student experience at the commencement of university study. The student experience was measured in respect to (a) estimate or expectation of gains and (b) student perception and experience of stress at the commencement of university life. These variables were chosen as they arguably define the positive and negative dimensions of the university experience that may determine subsequent continuation or alternatively cancellation of university study. This was thought a particularly relevant area as it was believed that those who hold values which result in their belief that they will gain a greater amount from university are more likely to thrive and if these values can be identified, they can be nurtured in new students to increase the chance of success whilst in the university environment.

Conversely, if those who are more susceptible to stress are identified, traits can be identified which can lead to the facilitation of additional support for future students, in order to reduce student attrition.

As mentioned earlier, the examination of stress was an elaboration of a pilot study (Barker 2000-1) that identified increasing stress levels in students at the University of Gloucestershire, with increasing demands as the main reason for student attrition.

However, in addition to simply examining the subjective measure of perceived stress, the current research also assessed biological stress indicators of salivary cortisol.

9.2 Aims and summary of findings of study 1

Study 1 aimed to investigate the effect of student work values, finances and demographics (age, gender, and additional number of hours of part-time work) on the level of perceived stress experienced by University of Gloucestershire students when first entering the university environment, in addition to how these factors affected their estimate of gains. On the basis of the pilot research conducted by Barker (2000-1), it was anticipated that those students experiencing the highest level of financial difficulty would have the highest level of perceived stress and those with the most intrinsically based values (due to their 'self' rather than any influence from others) would estimate themselves to gain more from the university environment and experience less stress. In addition to this it was also felt

appropriate to examine the effect of any demographic differences (gender, age and additional number of hours of part-time work) on variations in stress levels and gains. The reasons for the examination of these variables was, as regards gender, insufficient responses were obtained in the original pilot to allow this examination. Also, as regards age, it was believed that those older students who had carefully considered goals, would experience less stress and greater estimated gains than those younger students who simply reflect that which is expected of them. As regards part-time work, it was thought that those who found it necessary to work in addition to study would perceived more stress and less gains and this relationship would increase with the number of hours in addition to study that are worked.

The study found that, when examining the influence of specific values on an overall estimate of gains, the intrinsic values of achievement, advancement and personal development were significant predictors of overall estimated gains. This would suggest that those who are motivated by values linked to personal advancement estimate that they will achieve more on the whole from the university experience. This can be seen to support the past research, as a degree of reflection on the part of the student and the resultant benefits is suggested. In addition, this would appear to support the previous research such as Conti (2001), who suggested that developing a sense of purpose for studying at University provides additional motivation to succeed in this environment as this leads to reflection regarding reasons for attending the institution in terms of future benefits.

In addition to an overall effect of values on estimated gains, the effect of specific values on specific gains was also studied. As regards estimates of personal development gains, it was found that contrary to overall findings, this estimate was most influenced by the extrinsic values of prestige and economics, although there was also some contribution as expected from personal development values. This pattern of outcomes is consistent with the conclusion that these students estimate their personal development gains from university in terms of personal advancement that is linked to external rewards and status. This provides a great deal of support to statements made in the introduction regarding the changing demands of students entering the University environment as summarised by Astin (1998), in that there has been a change in student values from ' developing a meaningful philosophy of life' to ' being well off financially'. As postulated earlier, this result suggests that one of the significant reasons for a University education, at least in this specific population, is increased financial reward in the future.

Estimated gains regarding science and technology were also studied. From this it was found that those with more intrinsic values of achievement, advancement and personal development believed themselves to gain more knowledge of science and technology whilst at university. This implies that those students who are motivated by more intrinsic values will attribute greater importance to gains related to science and technology. The reason for this could obviously be the relevance of technology in the majority of modern industry. As a result of this, it would be an integral part of the

development of the individual. In order to satisfy goals relating to the 'self', in a technological world, the university environment may be seen as a tool for gaining skills, which will facilitate this development. However, the simplest explanation for these findings concerns the abundance of technology in everyday life. As the general level of technology has risen, surely it's importance would also rise and as mentioned earlier (Conti, 2001), it is the reflection on the reason for entering university by those who are more intrinsically motivated which will result in an appreciation of the usefulness of technology. However, this could also simply be due to the rapid growth of technology in recent years. Indeed, UNITE's 2005 student living report found that around half of all students owned an advanced mobile phone and a DVD player. Bearing the aforementioned in mind, the findings could suggest that those who are more intrinsically motivated reflect to a greater degree upon how technology is an integral part of life and hence can see the usefulness of progressing in this environment.

When looking at the influence of work values on the student estimated general education gains, the extrinsic value of social interaction was the only significant predictor, suggesting that for the students in this investigation general education is viewed as offering gains in regard to the social aspects of university and not necessarily the academic aspects. However, these findings can be seen to support the major theories presented in the introduction of Astin (1985) and Tinto (1987), which stress the importance of *involvement* as the key to progression and to lessen the chance of withdrawl. It is involvement which leads to integration into the

university environment and as, for example, Tinto (1987) suggests, interactions with both peers and staff in the institution have a significant effect on the development of the individual and the decision to progress or withdraw.

For the influence of work values on estimated gains in intellectual skills, the intrinsic values of advancement and personal development were significant predictors, suggesting a more personally motivated basis for the intellectual aspects of academic achievement. This is clearly in contrast to the previous result for the general gains of university in terms of student social life. Thus students obviously expect to gain both intellectual and social benefits from the university experience. Therefore, we can combine involvement in the University organisation and resultant development with the reflection on the part of the student regarding how their gains from the environment are related to success. It could, from all these findings mentioned earlier, be suggested that they demonstrate aspects of classical theories regarding the avoidance of student attrition, influenced more by external factors, combined with more modern theories of intrinsic reflection and resultant influence on estimated gains.

The above view is once again strengthened as regards the influence of work values on estimated gains in vocational preparation from the university experience, the intrinsic value of autonomy was the only significant predictor. This would suggest that those who directly see university as part of the career path, like to be given the freedom to complete this stage of

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their working life. This value for personal freedom may also reflect the desire for these individuals to be allowed more autonomy in their university programme. Indeed, it is the autonomy of goals which Conti (2001) suggested was the most important for success at University and therefore, these findings can be seen as support for the past research regarding intrinsic and extrinsic motivation.

In addition to the influence of work values on estimated gains from the university environment, the influence on differences in work values was also studied. However, it was found from this that work values did not significantly affect any differences in levels of perceived stress. It would be a useful continuation of this study to examine this relationship when the student has progressed further in their university study, dependent upon the availability of both intrinsic and extrinsic rewards and how this agrees or conflicts with their own values.

As stated earlier, the aim of study 1 was also to examine any associations between student groups in terms of the demographic variables of gender, age, number of hours worked in addition to study and financial situation on estimated gains and perceived stress. From this, only a few weak associations were found. As regards personal development gains, income per month was found to be the only significant predictor, with those receiving more money per month believing that they will gain more from university in terms of personal development. This appears to reflect the finding regarding the influence of extrinsic values on personal development,

but could also reflect the situation that students with greater financial income can experience a greater amount of student activities which could contribute to their personal development. If a greater amount of money results in less financial difficulty, then this could be seen to reflect findings such as those of Barker (2001) Leonard (1995) and McCarthy et al (1995) who found financial difficulty to be a major factor in student problems during university study and potential dropout. For example, Leonard (1995) found that many students often have to miss lectures as they simply cannot afford the transportation to the lecture theatre, or must make a decision between books for the course or food. Therefore it is clear that less money may lead to a lesser ability to fully experience student life and hence to develop less in personal terms over the time at university. In turn this could have quite a large effect on student attrition. Thus finances may link to personal advancement and so to student retention. Indeed, over the course of this study, theories of involvement have been used as grounds for reference. However, it could be suggested that without the necessary finances, involvement and any resultant gains are impossible.

In addition to this finding above, gender was found to be the only other predictor of gains, having a significant effect on intellectual skill gains, with males believing they will gain more in terms of intellectual skills than females. This could reflect gender differences in the value placed on education and would suggest the need for interventions by student support in order to develop these feelings of greater intellectual skill gains among the female student population. These findings would suggest some

influence of the role of gender differences in education. For example, many researchers, such as Sharpe (1976) have suggested that any differences are due to gender stereotypes and are an ongoing issue which must be addressed in education.

As regards hours of work, a significant effect was found regarding the level of estimated gains. Contrary to the expected result, those working fewer than four hours weekly believed themselves to gain significantly less from their university experience than those working more than sixteen hours weekly. The most obvious reason for this could be that those working longer hours have a much higher income and hence can experience more of the student life. In addition, this would support the results which indicated that personal development gains are influenced predominantly by extrinsic values, as the higher finances could mean a higher level of prestige in the way students are viewed by others and in terms of possessions and lifestyle. In addition, as was suggested in chapter 4, those working fewer than four hours weekly may be doing so, not by choice, but due to lack of suitable work, due to experience, timetable commitments etc. Thus, if the performance of additional part-time work is seen as a composite part of the student experience, this would explain why they could feel that they will gain less than those who work.

In addition to the above, a significant effect was found regarding differences in perceived stress levels for those of differing age ranges, with those students of eighteen years of age having significantly higher stress levels

than those above the age of eighteen. One reason for this could be due to a lack of general life experience in the younger group of students, resulting in a higher level of uncertainty about the situation they are entering (for example, Kasworm, 1980).

Also, when considering gender differences, it was found that males perceived they would gain more overall than females, whilst females felt a higher level of stress when entering the university environment. This would seem to suggest that males may be more optimistic about their university experience when entering higher education. This also supports the earlier findings regarding males believing they will gain more in terms of intellectual skill than females.

Therefore the overall pattern of results for study 1 suggest that intrinsic factors, for example, those relating values such as achievement and personal development were found to be more frequent predictors of student estimates of potential gains, although extrinsic factors, in particular economics, were also found to have a significant effect on student estimates of potential gains at commencement of the university experience. As previously mentioned, these findings both give support and expand the past theories of involvement (Astin, 1970) and attrition (Tinto, 1987), essentially combining the two. Involvement can be seen as a source of intrinsic motivation, guided by the individual's interaction with the environment. In contrast, attrition can be viewed as a source of extrinsic motivation, guided

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by the environment's influence on the individual. Study 1 has helped to highlight individual factors within this relationship.

However, there were no clear predictions of the negative aspects of the student experience in terms of perceived stress. This may have been due to the subjective nature of the 'perceived' stress scale used, as there is no guarantee that the individual will recognise the signs of stress, instead choosing to ignore or deny them. Indeed, as Cohen (1983) suggests, the PSS (Perceived Stress Scale) as used in this study, can be used to assess the risk of "appraised" stress. As a result, any lack of outcome measure may be due to the individual's appraisal mechanism for the stress experienced. This concern was later addressed in this thesis in study 4, which, in addition to examining the level of perceived stress reported, also examined biological indicators, in the form of cortisol levels, in order to provide an objective measure of the stress response.

9.3 Aims and summary of findings of study 2

Due to the large number of findings from study 1 regarding estimated gains and small number regarding stress, it was felt that the questionnaire could be expanded to cover a wider range of issues acting on the student when entering the university environment, particularly in regard to the student experience of stress. To effectively find the most relevant factors to study in the second round of questionnaire testing, a series of semi-structured interviews were conducted, using questions formulated from the frequency

of responses to open questions at the end of the questionnaire used in study 1.

Although participant numbers in study 2 were low, it was intended as a means of providing more in depth focus group material, and hence was deemed acceptable, as the results of this round of testing were used simply to provide inference towards which additional scales were to be added to the second round of questionnaire testing.

The results of these interviews suggested that more focus needed to be given to issues regarding the university environment, conceptualised as the level of demands the students felt were placed on them, the amount of control they felt they were given over their environment and the level of support provided for them. The importance of these issues, were also backed up by previous research, such as Karasek et al (1990). Essentially, Karasek's theory examined the effect of high psychological demands combined with the individual having little control in meeting those demands. People with high job demands can be seen to describe themselves as working very hard and worried about insufficient time to get the job done. In addition, individuals with little workplace controls describe themselves as lacking the ability and/or authority to make decisions or impact their position. More recently was the inclusion of a third factor, this being the beneficial effects of workplace social support. Therefore, Karasek (1990) suggests that if the demands placed on a person are higher than the perceived control, strain will occur. The results of the interviews clearly suggested an

influence of varying demands, control and support on the student in the University environment and as a result, it was decided that it would be beneficial to include a measure of this in the following round of questionnaire testing.

Also, in addition to the findings noted above, the interviews also suggested that more focus needed to be given to the locus of control of the student, in terms of the impact their own actions would have on the outcome of their time at university. Locus of Control was felt to be useful as the development of a more internal locus of control in terms of a higher degree of mastery can lead to direct stress-buffering effects (Nezu & Ronan, 1988). In addition, Abouserie (1994) found students with an external locus of control experience far more stress during university study than those with an internal locus of control. Therefore it would seem beneficial to study Locus of Control in order to help students develop a more internal attribution.

In summary, the focus group interviews raised issues regarding the students perception of their relationship to the university environment, particularly in respect to the degree to which this relationship allowed control, offered support or made demands. As a result of these findings, measures addressing these were incorporated into the next stage of questionnaire testing.

9.4 Aims and Summary of findings of study 3

Study 1 had investigated the effect of student work values, demographics and level of finances on the level of student estimate of gains and conversely perceived stress experienced by University of Gloucestershire students when first entering the university environment. Study 2 aimed to replicate study 1, but with the addition of a number of scales relating to demands, control, support and locus of control as perceived by students upon commencement of the university experience. This round of testing was also conducted on a sample of new students, being the next year of students starting the University of Gloucestershire, as again, the concern was with student perceptions at commencement of university study.

The study found that, when examining the influence of specific values on an overall estimate of gains, the intrinsic value of autonomy and extrinsic value of economics were significant predictors of overall estimated gains. This would suggest that those who are motivated by a need to fulfil values which result in intrinsic personal gains and financial reward estimate that they will achieve more on the whole from their university study. Again this reflects the role of both intrinsic and extrinsic values in this regard, as was found in study 1. Once again, as in the first round of testing, this would appear to support research by Conti (2001) on the benefits of reflection and autonomy. The similarity of these findings to the first round of testing also strengthens this current piece of research.

In addition to an overall effect of values on estimated gains, the effect of values on specific gains was also studied. Once more, as in study 1, it was found that estimates of personal development gains were most influenced by extrinsic values but this time, by the extrinsic value of social interaction. This would suggest that, at this particular institution, students see their estimate of personal development gains at university in terms of external social interactions with others. Once again, this highlights how student expectations about the gains from the university experience relate to social rewards or benefits and not solely from intellectual or professional gains.

The effect of student values on estimated gains regarding science and technology were also studied. Contrary to the findings of study 1, at this round of testing, it was found that there was no significant influence of values on estimated science and technology gains. Thus the result for study 1, that these gains are influenced by achievement, advancement and personal development values would not appear to be a consistent one.

When assessing the influence of work values on estimated general education gains, the extrinsic value of economics was the only significant predictor, again suggesting that the students studied view the gains from education in general to be primarily financial. In study 1, the predictive value was that of 'social interaction', also an 'extrinsic' value. Therefore contributing to an overall view that extrinsic factors (be they financial or social) are central to student perceptions about gains from the university experience.

For the influence of work values on estimated gains in intellectual skills, the intrinsic value of autonomy and the extrinsic value of economics were significant predictors. This suggests both a personal autonomously motivated basis for specific academic achievement as well as the additional influence of economics. Again, this outcome reflects the influence of both intrinsic and extrinsic values on student estimates of gains from the university experience.

As regards the influence of work values on estimated gains in vocational preparation from the university experience, the intrinsic value of autonomy and the extrinsic value of economics were again significant predictors. This would suggest that those who directly see university as part of the career path, like to act autonomously or with freedom in completing this stage of their working life. However, there was once again an additional influence of financial incentive, further supporting the view that it is the long term financial benefits which may have a significant motivational effect. Therefore, once again both intrinsic and extrinsic values can be seen to link to student estimate of gains from university life.

Thus for both studies 1 and 2, the analyses of the link between student values and estimate of gains reveals a consistent pattern. Both intrinsic (Achievement, Advancement, Autonomy and Personal Development) and extrinsic (Economics, Prestige and Social Interaction) values appear to be linked to student perceptions of what they will gain from the university experience.

As in the first round of questionnaire testing, in addition to the influence of work values on estimated gains from the university environment, the influence on differences in work values on perceived stress was also studied. However, it was once again found from this that work values did not significantly affect any differences in levels of perceived stress. The reason for this could simply be that, as regards the influence of values, stress is low at the commencement of university study. However, this outcome further contributed to the question of whether the instruments used for assessing student stress were sufficiently sensitive. This concern was further examined in study 4. As mentioned earlier, Cohen (1983) stated that use of the PSS was beneficial in order to examine an individual's 'appraisal' of stressful situations and therefore it would seem useful to use an additional biological measure of stress.

As stated earlier, the aim of study 3 was to replicate study 1 and hence to also examine any effect of demographic variables (gender, age, number of hours worked in addition to study and finances) on estimated gains and perceived stress. The regression analysis did not highlight any significant predictors for the demographic and finances variables, however a number of comparisons between pertinent demographic groups were still made due to the significance of the findings of study 1 and the fact that study 2 yielded a smaller sample size than that of study 1.

From the analyses conducted, it was found once again, as in study 1, that those working longer hours believed they would gain more in total from their

time at university than those working little or no hours. In addition to this, the same outcome was also found as for study 1 regarding personal development gains and intellectual skill gains, with those working longer hours believing they would gain more in terms of personal development and intellectual skills than those working few or no hours. No other significant differences were found other than those reported for the replicated results.

In addition to this replication of the first round of questionnaire testing, the influence of demands, control and support on estimate of gains and perceived stress was also studied. The results of this analysis suggested that there was a significant effect of demands on perceived stress, with higher demands resulting in higher level of perceived stress, however, no effect of control or support was found. Also, with the sample split into genders, it was found that females who perceived a higher level of control and support had lower stress levels. There were unfortunately no significant associations found for perceived demands control and support and stress for males. However, a correlation was found between locus of control and perception of demands from university for males. Those with a more internal locus of control perceiving a greater level of demands from the university environment, suggesting that those males who believe they are in control of the outcomes of their own actions recognise many more demands from their environment than those who believe the outcome is beyond their control. Thus the overall implication from these additional analyses is that students' perception of stress at the start of university study is linked in part to the level of demands perceived from the university environment, especially in

the case of males with an internal locus of control and for females who perceived that they have lower levels of control and support. Therefore, clearly student perceptions of demands, control and support may play a critical role in determining the level of stress experienced at the commencement of the university experience.

9.5 Aims and summary of findings of study 4

The previous studies had thus shown some influence of the variables of demand, control and support on perceived stress with some additional influence of locus of control, but no influence of values. It was decided for the final study to once again examine the effects of these variables of demand, control and support and locus of control on perceived stress, but in addition to also examine any effects on biological stress in the form of cortisol levels. The reason for the focus on the additional biological measurement was the concern that the instrument used for measuring stress, being subjective in nature, may not have been sufficiently sensitive to reveal actual stress levels, whereas cortisol levels, and in particular a combination of the two, would be more likely to do so.

It was found from this study that there was a negative correlation between cortisol levels and perceived support from the university environment. This outcome was particularly informative. It clearly suggests that those who felt they did not receive adequate support from the university were actually suffering from physiological stress. These findings support the past research

by Karasek (1998), suggesting that social support can be seen as a moderator of the effects of work demands on well-being, satisfaction and resultant performance. This is a particularly significant finding for those dealing with student welfare. It suggests that biological stress may be present, even if not reflected in more subjective measures of perceived stress. This is particularly important, as it would suggest the necessity of providing a high level of support as prevention rather than a cure. Waiting until a student complains of stress and asks for help may be too late to avoid the harm caused by biological stress.

In addition to this, it was found that, when examining the relationship between locus of control and perceived demands, control and support, those perceiving less available control were found to exhibit a more external locus of control, particularly for the 21-30 age group and those in debt. These factors may be important indicators of potential problems for students. This finding is particularly important as this could indicate a state of learned helplessness, which, if prolonged could result in almost certain negative effects on student performance, potentially resulting in the student leaving or failing the course of study. This possible state of learned helplessness was also suggested in the finding that those students who are experiencing debt view a greater amount of demands from their environment which they may see as possibly insurmountable, hence reflecting an external locus of control. Again, the level of debt and external locus of control may be important warning signals for future problems in the student's progress.

However, the problem appeared to be deeper than simply the effects of debt, as those who were not in debt also saw themselves as having a low level of control in the university environment and also a higher level of perceived stress. However, the absence of high cortisol levels for this group suggests that this may simply be the novelty of the situation and not an underlying problem which could threaten health and well-being.

In addition, when assessing the effect of additional part-time work on perceived demands, control, support and stress, both perceived and biological, it was found that those performing additional part-time work and academic study felt they had a lower level of control over their student experience and also a more external locus of control, perceiving the outcomes of their actions to be simply due to fate or chance. In addition to this those who had to work in addition to study were found to believe that they received less support from their environment and had higher cortisol levels. These findings would suggest that those who find it necessary to work require more support, or support better tailored to their needs as a working student. This is very important as the higher cortisol levels found are linked to a wide range of problems, the most serious of these being long-term health problems (long-term stress has often been linked to cardiovascular problems, eg Fauvel (2002). However, those who did not work in addition to study were still found to have high levels of perceived stress although not high cortisol levels. This highlights the distinction between subjective and objective measures of stress. Nonetheless,

although students who do not work may have high subjective but low objective stress, this does not mean they do not require support. However, the higher levels of perceived stress may simply be the result of entering a novel environment and may subside with familiarity, but this may nonetheless present a psychological barrier to effective study and progression.

As stated in chapter 8, the fact that for some students such stress is manifested in biological terms is cause for concern and the results point to areas that are potentially critical for the university in addressing negative aspects of the student experience.

9.6 Implications of current findings for Models of the Student Experience

Many of the classical theories of student departure are grounded in theory that does not incorporate several key variables that this investigation has shown to be important in student estimate of gains and stress at the outset of university study and may impact on later experience.. In particular theories such as Astin's (1985) and Tinto's (1987) only take account of the interaction between the individual and their environment surrounding the student experience and have not considered the specific interaction of the many psychological factors studied in this investigation, namely values, estimated gains, perceived stress, biological stress, demands, control, support and locus of control, That is not to detract from the massive value and influence of these theories. Although to a large degree exploratory, this

study has provided a rare insight into the complex mix of psychological factors which all add to the complexity of the student experience. .

Another example of the shortcomings of past theory can be found in consideration of the addition of work stress theories such as Karasek's (1998) Demand, Control, Support theory. Previously, theories of student well-being and attrition could be seen to stand independently. However, as the 'student experience' has evolved, these theories must now adopt a number of perspectives from occupational psychology if they are to truly reflect the position of today's undergraduate student community.

9.7 Implications of current findings for university policy

The current investigation offers strong indications of factors that are likely to be important at the outset of student experience and may affect further progress. Thus the investigation may be valuable for university policy in respect to supporting students throughout their programme of study. It is conceivable that ignoring these factors may have serious consequences for student well-being and progress . The key factors identified by the investigation that may be of importance in this regard are especially those of student perceptions of demands, control and support Where there is low control and support with high demands there may well be resulting stress and additional psychological impact on student wellbeing. This may not only impact on individual student experience but may inevitably affect both the provision and quality of higher education

offered by the institution in the long run. Thus universities may do well to take account of these factors in their policies and procedures aimed at monitoring student progress and welfare.

These fators of demand, support and control may need to be considered by universities in conjunction with the issue of student employment or work hours outside university time. Working in addition to study results in a poorer level of mental health, as Roberts et al (1998) highlight .The findings from the current study suggest the link between longer work hours and poorer mental health for students should be a matter for concern for university policy. It may be of course that the link is not causal but it is difficult to imagine any obvious reasons why those with poorer mental health would work longer hours. In fact, it is more likely that those with poorer mental health will work less hours, (eg. Roberts et al 1998).

Above all university policy should acknowledge that it is not necessarily the objective indicators that will determine student experience but rather student perception of these. This is clear in the findings of students' perception of demand, support and control but also in other aspects of the current findings. For example, the reason for a lack of correlation between perceived and biological measures of stress could be a difference in perception, or in student coping ability. If this is the case, it is not the stress, but the perception of and lack of ability to cope with the stress which will result in students dropping out of university education. Thus student perceptions and strategies warrant attention in university

policy as well as the objective variables that underlie the student experience..

9.8 Methodological limitations of the research performed

Although the studies conducted have provided valuable information, there are certain provisos regarding the methods adopted, which should be considered. Possibly the main limitations of this kind of study are based around the use of questionnaires as a data collection tool. It is commonly understood that all self-report surveys are subject to some amount of response bias, most commonly due to social desirability (Schulz et al, 2000). This can be seen in slight over-reporting of desirable and under-reporting of undesirable behaviours. Additional inference toward this viewpoint comes from the fact that this study has actually found that a number of subjects are motivated by extrinsic values and hence the opinion of others would mean a great deal.

There is always a far greater chance of an honest answer if the questionnaires are truly anonymous and in a situation such as this research, students may be wary of a study when they first arrive which they could perceive as reporting negative views about the university. In an attempt to minimise this effect, the research was carried out in a serious and supportive manner, the neutrality of the research was stressed and any questions answered knowledgeably. In a further attempt to counter this

issue, the use of biological testing in terms of cortisol measurement was adopted in study 4.

A further limitation was the small sample sizes used for both the interviews and cortisol testing. However, these studies were mainly for development and inference purposes and particularly in the case of the cortisol testing, financial considerations limited the number of subjects that could be tested and the frequency of the tests. Again, the frequency was lower than the recommended amount for cortisol testing, however, it was still deemed a worthwhile exploration. The results of this particular stage of testing have provided a wealth of information and valuable inference for further study. If a number of findings are evident from using a small sample, the use of a larger sample with additional periods of cortisol sampling could expand the findings of the present study.

In addition to those mentioned above, a further limitation concerns the fact that a large amount of the variance in estimated gains may be due to differences in the pre-university institutions or a joint effect. It would appear beneficial in future studies to combine the university and pre-university institutions as variables for study. Also, within each of these environments will exist further sub-environments and one could question the sensitivity of current materials and studies to test the myriad of differences which could result from this tapestry of influence.

9.9 Further Research

Bearing the aforementioned in mind, it would appear pertinent that future models of student experience and stress should incorporate the variables of estimated gains, perceived and biological indicators of stress, locus of control and a measure of the demands, control and support from the university environment.

As was highlighted at the commencement of this research, much of this study was exploratory in nature, regarding the identification of high-risk groups who may be susceptible to stress, and differences between these groups and other groups within the University of Gloucestershire student population. Due to this particular perspective, groups were divided according to equality of sample size, to allow for maximum sensitivity of tests of significance. Pedhazur and Schmelkin (1991) stress the importance of equal sample sizes as they lead to greater sensitivity of significance tests and minimise potential distortions due to departures from assumptions underlying such tests. The result of this is that high-risk groups have been identified within the organisation in question, as was initially intended, particularly regarding the students of differing ages and performing differing additional hours of paid work in addition to study. Now that these groups have been identified in this particular type of institution, it would appear worthwhile to examine if differences between these same groups are evident in similar types of institution and any reasons for differences between institutions. For example, between old and new university

institutions and perhaps even taking into account these group differences in traditional university environments and those placing greater emphasis on vocational training.

In addition to the above, the inclusion of inferential statistics has suggested the usefulness in this arena of the measurement of biological indicators of stress, in particular, relating to demands, control and support during the university experience. The findings from this study which provide the inference, although from a small number of tests performed, were still found to be significant in this instance and hence are worthy of expansion in a larger, more comprehensive study of salivary cortisol in students.

9.10 Overall Conclusions

In conclusion, the investigation conducted found the following:

1) There is a definite prediction of estimate of gains from the university environment by the work values studied. Although it was found that gains were primarily influenced by intrinsic values (achievement, advancement, autonomy, personal development), an influence of extrinsic values (economics, prestige, social interaction) was also evident.

2) In addition to work values, demographics of gender, age and hours of work were also found to influence differences in estimated gains and stress.

3) None of the values studied were found to predict perceived stress, however study 4 highlighted the distinction between perceived and objective biological measures of stress. In particular, with regard to the perception of demands, control and support from the university environment. This distinction being further highlighted by the results which show no correlation between the scores for perceived and biological measures of stress.

4) The extent to which students perceive demands, control and support from the university environment may also have an impact on the student experience of stress, particularly biological stress, which can result in potential harm to physical well-being.

Therefore, potential warning signals of stress or conversely indicators of student estimates of gains may be both intrinsic and extrinsic values, student demographics of gender, age and additional hours of work when studying, the demands, control and support perceived by the student from the university environment and whether the student has an internal or external locus of control. University support services may do well to consider these factors with regard to identifying at risk when initially entering the university environment.

<u>Appendix</u>

Student Experiences Questionnaire

Hi, my name is Andrew Higham. I am currently undertaking research at the University of Gloucester and would greatly appreciate your help. This questionnaire forms part of a study conducted for independent PhD research at the university. The aim of this research is to explore the reasons for undertaking study of students at the University of Gloucestershire, particularly regarding the effects of individual attitudes and values on the ability to cope with the demands of university. Please answer each question with **your expectations** of university life.

We would greatly appreciate your honesty, as there are no correct or incorrect responses. The results of this study are to be used to provide guidance regarding the improvement of student services. **Plus the chance to win £40 worth of Students Union vouchers, (useable at the S.U. bars and for a wide range of S.U. events).**

Your questionnaire is strictly **confidential**. Any information required will be used solely as a means of data collection and to conduct a comparison study in the following year of your time at university. Any information you give is voluntary and you are not required to answer any questions you do not feel comfortable with. In this case, please leave the question blank and continue to fill in the remaining questions. If you are happy to give your consent, please sign and date below.

Signed_____

Date_____

Every questionnaire returned helps provide information to improve student support. Even if you have no strong opinions regarding some questions, your honest answers are still very important. Please do not confer with others when filling out the questionnaire, as we need your own personal views.

If you have any questions regarding this questionnaire, its nature or its purpose, feel free to ask the person giving out the questionnaire, or contact **Andrew Higham** confidentially by e-mail at **ahigham@glos.ac.uk**

If you have any concerns regarding student life, and require any help or advice, there are a number of sources of information available.
- Your academic advice co-ordinator (in your major field).
- Your doctor, or the university medical centre – 2778
- The student counselling service – 3341
  For information regarding financial issues, contact:
- Student Union – 2848 (Park), 2219 (Pittville) or 3439 (FCH)
- Teri O'Hara – 3332

Thank you for your help with this research. Your views are greatly appreciated. You are free to withdraw from this study at any time.

Student Demographics

Student Number: S_____ (To be used for follow-up only).

Gender: Male / Female

Age: _____

Student Type: Full time / Part time

Major subject: _____

Finances

Do you pay course fees?   Yes / No

If 'yes', how much per year?   _____

Are you currently in debt?   Yes / No

If 'yes', how much do you owe?   _____

Estimate of Gains

To what extent do you think you will make progress in the following areas over your time at university, (circle number to indicate):

	Very Much			Very Little
1) Acquiring knowledge and skills applicable to a specific job or type of work.	1	2	3	4
2) Acquiring background and specialisation for further education in a professional field.	1	2	3	4
3) Gaining a broad general education about different fields of knowledge.	1	2	3	4
4) Gaining a range of information that may be relevant to a career.	1	2	3	4
5) Developing an understanding and enjoyment of the arts.	1	2	3	4
6) Broadening your knowledge and enjoyment of literature.	1	2	3	4
7) Gaining knowledge about other parts of the world and other people.	1	2	3	4
8) Writing clearly and effectively.	1	2	3	4
9) Communicating effectively when speaking to others.	1	2	3	4
10) Using computers and other information technologies.	1	2	3	4
11) Developing your understanding of different philosophies, cultures and ways of life.	1	2	3	4
12) Developing your own values and ethical standards.	1	2	3	4
13) Understanding yourself, your abilities, interests and personality.	1	2	3	4
14) Developing the ability to get along with different kinds of people.	1	2	3	4
15) Developing the ability to function as a member of a team.	1	2	3	4
16) Developing good health habits and physical fitness.	1	2	3	4
17) Understanding the nature of science and experimentation.	1	2	3	4
18) Understanding new developments in your chosen field.	1	2	3	4
19) Thinking analytically and logically.	1	2	3	4
20) Analysing quantitative problems.	1	2	3	4
21) Putting ideas together, seeing relationships, similarities, and differences between ideas.	1	2	3	4
22) Learning on your own, pursuing ideas and finding				

	1	2	3	4
information you need.	1	2	3	4
23) Learning to adapt to change.	1	2	3	4

Values

This section aims to examine a number of values and aspirations in your life. Please circle the number, which most reflects your level of importance given to each statement.

It is now or will be important for me to.....

	Very Important		Of Little or No Importance	
1) Use all my skills and knowledge	1	2	3	4
2) Obtain results that show I have done well	1	2	3	4
3) Get ahead	1	2	3	4
4) Be able to afford the things I want	1	2	3	4
5) Develop as a person	1	2	3	4
6) Be admired for my knowledge and skills	1	2	3	4
7) Take part in activities with other people	1	2	3	4
8) Do work in which I have abilities	1	2	3	4
9) Know that my efforts in life will show	1	2	3	4
10) Advance quickly in my career	1	2	3	4
11) Have a good income	1	2	3	4
12) Have ideas about what to do with my life	1	2	3	4
13) Receive recognition for my accomplishments	1	2	3	4
14) Work in a group rather than by myself	1	2	3	4
15) Do work in which I can develop my abilities	1	2	3	4
16) Reach a high standard in my work	1	2	3	4
17) Be able to get promotions	1	2	3	4
18) Work where employment is regular and secure	1	2	3	4
19) Find personal satisfaction in my work	1	2	3	4
20) Be respected for the quality of my work	1	2	3	4
21) Be with other people while I work	1	2	3	4
22) Use my talents in my work	1	2	3	4
23) Achieve the goals I have set for myself	1	2	3	4
24) Work where people have a chance to get ahead	1	2	3	4
25) Be financially secure	1	2	3	4
26) Take my responsibilities seriously	1	2	3	4
27) Have others think well of the work I do	1	2	3	4
28) Be involved with others	1	2	3	4
29) Work at what I am good at	1	2	3	4
30) Complete what I start	1	2	3	4
31) Be successful	1	2	3	4
32) Earn a steady income	1	2	3	4

33) Be responsible for doing my work well

34) Be known for doing good work

35) Spend time with friends

1	2	3	4
1	2	3	4
1	2	3	4

Stress

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

0 = Never   1 = Almost Never   2 = Sometimes   3 = Fairly Often   4 = Very Often

1) In the last month, how often have you been upset because of something that happened unexpectedly?   0   1   2   3   4

2) In the last month, how often have you felt that you were unable to control the important things in your life?   0   1   2   3   4

3) In the last month, how often have you felt nervous / "stressed"?

0   1   2   3   4

4) In the last month, how often have you felt confident about your ability to handle your personal problems?   0   1   2   3   4

5) In the last month, how often have you felt that things were going your way?   0   1   2   3   4

6) In the last month, how often have you found that you could not cope with all the things that you had to do?   0   1   2   3   4

7) In the last month, how often have you been able to control irritations in your life?   0   1   2   3   4

8) In the last month, how often have you felt on top of things?   0   1   2   3   4

9) In the last month, how often have you been angered because of things that were outside of your control?   0   1   2   3   4

10) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?   0   1   2   3   4

General Questions

This section aims to look at your views regarding your time at university. Please be as honest as possible in answering.

What factors may influence your choice of additional work whilst at university?_____

_____

_____

How may your financial situation have an effect on stress experienced?_____

_____

_____

How may your financial situation have an effect on social
life?_____

_____

_____

Are there ways in which you feel student support services could be
improved?_____

_____

_____

What is the main problem you feel you may experience with student
life?_____

_____

_____

_____

What aspect of student life are you most looking forward
to?_____

_____

_____

Were there any questions you feel should have been asked that
weren't?_____

_____

_____

_____

THANKYOU FOR YOUR TIME AND HELP WITH THIS RESEARCH.

If you would like any further discussion relating to any topics covered in this questionnaire, please
feel free to contact me at the e-mail address on the first page, leaving contact details and I will be
delighted to provide any help and advice possible.

Student Experiences Questionnaire

Hello, our names are Andrew Higham and Gwen Chaney, and we are currently undertaking research at the University of Gloucestershire. We would greatly appreciate your help – it will benefit University students in the future. This questionnaire forms part of a study conducted for independent PhD research at the university by Andrew. It is also being used to inform plans to improve the student experience and thus student success and retention. The aim of this research is to explore the reasons why students are undertaking studies at the University of Gloucestershire, the things that help them succeed, particularly their ability to cope with the demands of university.

I would greatly appreciate your honesty, as there are no correct or incorrect responses. The results of this study are to be used to provide guidance regarding the improvement of student services. **Plus the chance to win a prize!!**

Your questionnaire is strictly **confidential**. As a means of maintaining this confidentiality, you are asked to provide alternative means of identification. The result of this is that the experimenter cannot identify any participant outside of their responses – but does enable us to follow up your responses if need arises.

If you are happy to give your consent, please sign and date below.

Signed_____

Date_____

Any information required will be used solely as a means of data collection for Andrew's PhD and to inform future provision at the University. With your help, Andrew would like to conduct a follow up study of heart rate and blood pressure in relation to stress and Gwen would like to further explore your level of emotional intelligence, its relationship to your success and enjoyment as a student, and how it can be improved. Any information you give is voluntary and you are not required to answer any questions you do not feel comfortable with. In this case, please leave the question blank and continue to fill in the remaining questions.

Every questionnaire returned helps provide information to improve student support. Even if you have no strong opinions regarding some questions, your honest answers are still very important. Please do not confer with others when filling out the questionnaire, as we need your own personal views.

If you have any questions regarding this questionnaire, its nature or its purpose, feel free to ask the person giving out the questionnaire, or contact **Andrew Higham or Gwen Chaney** confidentially by e-mail at **ahigham@glos.ac.uk** or gchaney@glos.ac.uk

If you have any concerns regarding student life, and require any help or advice, there are a number of sources of information available.

- Your Personal Tutor or Senior Tutor or Field Chair (in your major field).
- Your doctor, or the university medical centre – 2778
- The student counselling service – 3341

- Student Union – 2848 (Park), 2219 (Pittville) or 3439 (FCH)
- For financial issues - Teri O'Hara – 3332

Thank you for your help with this research. Your views are greatly appreciated. You are free to withdraw from this study at any time.

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Student Number: S_____ (To be used for follow-up only).

Gender: Male / Female

Age: _____

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Major subject: _____

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Do you pay course fees?   Yes / No

If `yes`, how much per year? _____

Are you currently in debt?   Yes / No

If `yes`, how much do you owe? _____

Estimate of Gains

To what extent do you think you will make progress in the following areas over your time at university, (circle number to indicate):

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2) Acquiring background and specialisation for further education in a professional field.	1	2	3	4
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This section aims to examine a number of values and aspirations in your life. Please circle the number, which most reflects your level of importance given to each statement.

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24) Work where people have a chance to get ahead	1	2	3	4
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33) Be responsible for doing my work well	1	2	3	4
34) Be known for doing good work	1	2	3	4
35) Spend time with friends				

Stress

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

0 = Never   1 = Almost Never   2 = Sometimes   3 = Fairly Often   4 = Very Often

11) In the last month, how often have you been upset because of something that happened unexpectedly?   0   1   2   3   4

12) In the last month, how often have you felt that you were unable to control the important things in your life?   0   1   2   3   4

13) In the last month, how often have you felt nervous / "stressed"?   0   1   2   3   4

14) In the last month, how often have you felt confident about your ability to handle your personal problems?   0   1   2   3   4

15) In the last month, how often have you felt that things were going your way?   0   1   2   3   4

16) In the last month, how often have you found that you could not cope with all the things that you had to do?   0   1   2   3   4

17) In the last month, how often have you been able to control irritations in your life?   0   1   2   3   4

18) In the last month, how often have you felt on top of things?   0   1   2   3   4

19) In the last month, how often have you been angered because of things that were outside of your control?   0   1   2   3   4

20) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?   0   1   2   3   4

Control

To what extent do you feel your results are due to personal effort during your time at university, (circle number to indicate):

Agree   **Disagree**

1) When I receive a poor grade, I usually feel that the main reason is that I haven't studied enough for that course.   0   1   2   3   4

2) If I were to receive low marks it would cause me to question my academic ability.   0   1   2   3   4

3) Some of the times that I have gotten a good grade in a course, it was due to the teachers easy grading scheme.   0   1   2   3   4

4) Sometimes my success on exams depends on some luck.   0   1   2   3   4

5) In my case, the good grades I receive are always the direct results of my efforts.   0   1   2   3   4

6) The most important ingredient in getting good grades is my academic ability.   0   1   2   3   4

7) In my experience, once a professor gets the idea you're a poor student, your work is much more likely to receive poor grades than if someone else handed it in.   0   1   2   3   4

8) Some of my lower grades have seemed to be partially due to bad breaks.   0   1   2   3   4

9) When I fail to do as well as expected in college, it is often due to a lack of effort on my part.   0   1   2   3   4

10) If I were to fail a course it would probably be because I

lacked skill in that area.

| | | 0 | 1 | 2 | 3 | 4 |

11) Some of my good grades may simply reflect that these were easier courses than most.

| 0 | 1 | 2 | 3 | 4 |

12) I feel that some of my good grades depend to a considerable extent on chance factors such as having the right questions show up on an exam.

| 0 | 1 | 2 | 3 | 4 |

13) Whenever I receive good grades, it is always because I have studied hard for that course.

| 0 | 1 | 2 | 3 | 4 |

14) I feel that my good grades reflect directly on my academic ability. 0 1 2 3 4

15) Often my poorer grades are obtained in courses that the professor has failed to make interesting.

| 0 | 1 | 2 | 3 | 4 |

16) My academic low points sometimes make me think I was just unlucky.

| 0 | 1 | 2 | 3 | 4 |

17) Poor grades inform me that I haven't worked hard enough.   0 1 2 3 4

18) If I were to get poor grades I would assume that I lacked ability to succeed in those courses.

| 0 | 1 | 2 | 3 | 4 |

19) Sometimes I get good grades only because the course material was easy to learn.

| 0 | 1 | 2 | 3 | 4 |

20) Sometimes I feel that I have to consider myself lucky for the good grades I get.

| 0 | 1 | 2 | 3 | 4 |

21) I can overcome all obstacles in the path of academic success if I work hard enough.

| 0 | 1 | 2 | 3 | 4 |

22) When I get good grades, it is because of my academic competence. 0 1 2 3 4

23) Some low grades I've received seem to me to reflect the fact that some teachers are just stingy with marks.   0 1 2 3 4

24) Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time.   0 1 2 3 4

| **University Evironment** |

Please decide which of the following statements are true of your student life and which are false. If you think a statement is true or *mostly* true, circle T. If you think a statement is false of *mostly* false, circle F.

1) People go out of their way to help a new student feel comfortable.   T   F

2) Few students have any important responsibilities.   T   F

3) There is constant pressure to keep working.   T   F

4) The atmosphere is somewhat impersonal.   T   F

5) Students have a great deal of freedom to do as they like.   T   F

6) There always seems to be an urgency about everything.   T   F

7) People take a personal interest in each other.   T   F

8) Students are encouraged to make their own decisions.   T   F

9) People cannot afford to relax.   T   F

10) Students rarely do things together after class.   T   F

11) People can use their own initiative to do things.   T   F

12) Nobody works too hard.   T   F

13) People are generally frank about how they feel.   T   F

14) Tutors encourage students to rely on themselves when a problem arises.   T   F

15) There is no time pressure.   T   F

16) Students often each lunch together.   T   F

17) Students generally do not try to be unique and different.   T   F

18) It is very hard to keep up with your work load.   T   F

19) Students who differ greatly from the others in the university don't get on well. T   F

20) Students are encouraged to learn things even if they are not directly
    related to the course.   T   F

21) You can take it easy and still get your work done.   T   F

22) Students often talk to each other about their personal problems.   T   F

23) Students function fairly independently of supervisors.   T   F

24) There are always deadlines to be met.   T   F

25) Often people make trouble by talking behind others' backs.   T   F

26) Tutors meet with students regularly to discuss their future work goals.   T   F

27) People often need extra time to get their work done.   T   F

THANKYOU FOR YOUR TIME AND HELP WITH THIS RESEARCH.
If you would like any further discussion relating to any topics covered in this questionnaire, please feel free to contact me at the e-mail address on the first page, leaving contact details and I will be delighted to provide any help and advice possible.

Appendix C: Statement of Informed Consent

Statement of Informed Consent

This statement of informed consent outlines your rights as a participant and also gives details of what we, as researchers, are asking of you. If you are willing to take part in this research please read and sign the informed consent.

We are interested to learn how students make the transition to University, since this is a big change in their lives. If you are willing to participate, we would like you to fill out a questionnaire in addition to participation in this focus group. We would also like to ask you to participate in the follow-up of this study, which will be conducted when you are in the first year of University. You can provide us with your contact details on the questionnaire, so we will be able to contact you later. If you give us your contact details, you are still under no obligation to participate in the follow-up. You can withdraw anytime.

Do not hesitate to ask any questions about the study either before participating or during the time that you are participating. Remember there are no right or wrong answers; we are just interested in your personal responses. We will also be happy to share our findings with you after the research is complete. Your name will not be associated with the research findings in any way. All the information you provide will be kept strictly confidential.

I understand that my participation in this project will involve completing questionnaires concerning factors that you believe are related to adjustment to University and participation in an anonymous focus group.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time for any reason.

I understand that I am free to ask any questions at any time. If for any reason I experience discomfort during participation in this project, I am free to withdraw or discuss my problems with the researcher.

I understand that the information provided by me will be held totally anonymously, so that it is impossible to trace this information back to me individually. I understand that, in accordance with the Data Protection Act, this information may be retained indefinitely.

I also understand that at the end of the study I will be provided, on request with the additional information and feedback.

I, _____ (NAME) consent to participate in the study conducted by, A. Higham School of Health & Social Sciences, University of Gloucestershire.

Date _____

Signature _____

Appendix D) Focus Group Questions

1) Institutional Influences

Why did you come to the University of Gloucestershire?

What do you want to get from your time here?

2) Individual Influences

Which do you feel is more important, gaining independence and meeting new people or gaining a qualification?

What are the main problems you feel you may experience with student life?

3) Influence of Social Networks

Are there issues concerning lecturers or staff, the way that studying is organised, accommodation, friends, societies etc?

Will you miss your parents and friends from home?

4) Specific Issues Relating to Retention / Dropout

What do you feel has the greatest effect on your success at university?

How much effect does the university environment have?

How much of your success is due to your own personal efforts?

5) Influence of Academic and Additional Work

Do you feel that working and studying may cause any problems?

How do you feel you will cope with academic work demands?

Appendix E) Round 4 testing questionnaire

Student Experiences Questionnaire

Hi, my name is Andrew Higham. I am currently undertaking research at the University of Gloucester and would greatly appreciate your help. This questionnaire forms part of a study conducted for independent PhD research at the university. The aim of this research is to explore the reasons for undertaking study of students at the University of Gloucestershire, particularly regarding the effects of individual attitudes on the ability to cope with the demands of university and resultant stress. Please answer each question with **your expectations** of university life.

We would greatly appreciate your honesty, as there are no correct or incorrect responses. The results of this study are to be used to provide guidance regarding the improvement of student services.

Your questionnaire is strictly **confidential**. Any information required will be used solely as a means of data collection and to conduct a comparison study in the following year of your time at university. Any information you give is voluntary and you are not required to answer any questions you do not feel comfortable with. In this case, please leave the question blank and continue to fill in the remaining questions.
If you are happy to give your consent, please sign and date below.

Signed_____

Date_____

Every questionnaire returned helps provide information to improve student support. Even if you have no strong opinions regarding some questions, your honest answers are still very important. Please do not confer with others when filling out the questionnaire, as we need your own personal views.

If you have any questions regarding this questionnaire, its nature or its purpose, feel free to ask the person giving out the questionnaire, or contact **Andrew Higham** confidentially by e-mail at **ahigham@glos.ac.uk**

Student Demographics

Student Number: S_____ (To be used for follow-up only).

Gender: Male / Female

Age: _____

Student Type: Full time / Part time

Major subject: _____

Finances

Do you pay course fees?   Yes / No

If `yes`, how much per year?   _____

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Are you currently in debt?   Yes / No

If `yes`, how much do you owe? _____

Stress

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

0 = Never   1 = Almost Never   2 = Sometimes   3 = Fairly Often   4 = Very Often

21) In the last month, how often have you been upset because of something that happened unexpectedly?   0 1 2 3 4

22) In the last month, how often have you felt that you were unable to control the important things in your life?   0 1 2 3 4

23) In the last month, how often have you felt nervous / "stressed"?   0 1 2 3 4

24) In the last month, how often have you felt confident about your ability to handle your personal problems?   0 1 2 3 4

25) In the last month, how often have you felt that things were going your way?   0 1 2 3 4

26) In the last month, how often have you found that you could not cope with all the things that you had to do?   0 1 2 3 4

27) In the last month, how often have you been able to control irritations in your life?   0 1 2 3 4

28) In the last month, how often have you felt on top of things?   0 1 2 3 4

29) In the last month, how often have you been angered because of things that were outside of your control?   0 1 2 3 4

30) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?   0 1 2 3 4

Control

To what extent do you feel your results are due to personal effort during your time at university, (circle number to indicate):

Agree   **Disagree**

17) When I receive a poor grade, I usually feel that the main reason is that I haven`t studied enough for that course.   0 1 2 3 4

18) If I were to receive low marks it would cause me to question my academic ability.   0 1 2 3 4

19) Some of the times that I have gotten a good grade in a course, it was due to the teachers easy grading scheme.   0 1 2 3 4

20) Sometimes my success on exams depends on some luck.   0 1 2 3 4

21) In my case, the good grades I receive are always the direct results of my efforts.   0 1 2 3 4

22) The most important ingredient in getting good grades is my academic ability.   0 1 2 3 4

23) In my experience, once a professor gets the idea you`re a poor student, your work is much more likely to receive poor grades than if someone else handed it in.   0 1 2 3 4

24) Some of my lower grades have seemed to be partially due to bad breaks.   0 1 2 3 4

25) When I fail to do as well as expected in college, it is often due to a lack of effort on my part. 0 1 2 3 4

26) If I were to fail a course it would probably be because I lacked skill in that area. 0 1 2 3 4

27) Some of my good grades may simply reflect that these were easier courses than most. 0 1 2 3 4

28) I feel that some of my good grades depend to a considerable extent on chance factors such as having the right questions show up on an exam. 0 1 2 3 4

29) Whenever I receive good grades, it is always because I have studied hard for that course. 0 1 2 3 4

30) I feel that my good grades reflect directly on my academic ability. 0 1 2 3 4

31) Often my poorer grades are obtained in courses that the professor has failed to make interesting. 0 1 2 3 4

32) My academic low points sometimes make me think I was just unlucky. 0 1 2 3 4

17) Poor grades inform me that I haven't worked hard enough. 0 1 2 3 4

22) If I were to get poor grades I would assume that I lacked ability to succeed in those courses. 0 1 2 3 4

23) Sometimes I get good grades only because the course material was easy to learn. 0 1 2 3 4

24) Sometimes I feel that I have to consider myself lucky for the good grades I get. 0 1 2 3 4

25) I can overcome all obstacles in the path of academic success if I work hard enough. 0 1 2 3 4

22) When I get good grades, it is because of my academic competence. 0 1 2 3 4

20) Some low grades I've received seem to me to reflect the fact that some teachers are just stingy with marks. 0 1 2 3 4

21) Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time. 0 1 2 3 4

University Environment

Please decide which of the following statements are true of your student life and which are false. If you think a statement is true or *mostly* true, circle T. If you think a statement is false of *mostly* false, circle F.

1) People go out of their way to help a new student feel comfortable. T F

2) Few students have any important responsibilities. T F

3) There is constant pressure to keep working. T F

4) The atmosphere is somewhat impersonal. T F

5) Students have a great deal of freedom to do as they like. T F

6) There always seems to be an urgency about everything. T F

7) People take a personal interest in each other. T F

8) Students are encouraged to make their own decisions. T F

9) People cannot afford to relax. T F

10) Students rarely do things together after class.　　T　F

11) People can use their own initiative to do things.　　T　F

12) Nobody works too hard.　　T　F

13) People are generally frank about how they feel.　　T　F

14) Tutors encourage students to rely on themselves when a problem arises.　　T　F

15) There is no time pressure.　　T　F

16) Students often each lunch together.　　T　F

17) Students generally do not try to be unique and different.　　T　F

18) It is very hard to keep up with your work load.　　T　F

19) Students who differ greatly from the others in the university don't get on well.　　T　F

20) Students are encouraged to learn things even if they are not directly related to the course.　　T　F

21) You can take it easy and still get your work done.　　T　F

22) Students often talk to each other about their personal problems.　　T　F

23) Students function fairly independently of supervisors.　　T　F

24) There are always deadlines to be met.　　T　F

25) Often people make trouble by talking behind others' backs.　　T　F

26) Tutors meet with students regularly to discuss their future work goals.　　T　F

27) People often need extra time to get their work done.　　T　F

THANKYOU FOR YOUR TIME AND HELP WITH THIS RESEARCH.
If you would like any further discussion relating to any topics covered in this questionnaire, please feel free to contact me at the e-mail address on the first page, leaving contact details and I will be delighted to provide any help and advice possible

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