THE ASSOCIATION BETWEEN PHYSICAL ACTIVITY, SUBSTANCE USE, EDUCATIONAL SATISFACTION AND ACADEMIC ACHIEVEMENT IN HIGHER EDUCATION.

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Abstract

Context:

This study explores high profile aspects of student culture and educational satisfaction in a bespoke environment with a high sporting culture. It aims to add to the body of literature through its unique combination of factors and their relation to academic achievement in a sample from a specialist setting.

Purpose:

1- To investigate the current levels of physical activity, alcohol consumption, substance use and educational satisfaction in a sample of UK university students.

2- To explore the associations of physical activity, alcohol consumption, substance use and educational satisfaction with academic achievement.

Method:

Sample- 339 students in the Faculty of Sport, Health and Social Care. Male 51.6% Female 48.4%, mean ages 22.3 (± 6.9).

Data Collection- Data was collected via two questionnaires, the first covered health and lifestyle behaviours, the second educational satisfaction. Academic achievement was represented by module grade taken from the university system.

Results:

Many students were sedentary and physical activity levels varied greatly across the sample. Reports of alcohol consumption were high but substance use low. Educational satisfaction showed moderate to high levels in this sample. In order of statistical significance educational satisfaction, year of study, binge drinking, time spent sitting, age, and alcohol frequency were associated with module grade ($p \leq =0.05$, R^2 0.088).

Conclusion:

The findings of this study both support and contradict the previous literature surrounding academic achievement. There is a need for interventions on alcohol consumption and physical activity in this population. Investigations of expectations/importance and satisfaction should be carried out at a modular or course level and comparisons made between traditional and mature students to better understand factors of educational satisfaction and it's impact on academic achievement.

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.

Signed …….……..……….. Date 22nd Febuary 2012

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This project has been a longer and more difficult journey than I ever anticipated, for various reasons. Now I am on the other side I would like to say thank you to the following people:

Contents

1. Introduction

Behaviours often demonstrated by University students, such as high alcohol consumption, low physical activity, smoking and poor diets have repeatedly shown strong links to chronic health conditions such as coronary heart disease, obesity and diabetes (Sesso *et al*, 2000; Biddle *et al*, 2004; Kravitz, 2007), that create large strains on public health systems. According to data from the 2009 Chief Medical Officer's annual report, alcohol misuse is estimated to affect 6-9% of the English population, costing the NHS £2.7 billion and the English economy £20 billion each year. Tobacco smoking affects 20%, costing the NHS £2.7 billion and the economy £5.2 billion. Inactivity (classed as failing to meet the recommended physical activity levels) affects 61-71%, costing £1-1.8 billion and £8.3 billion to the NHS and economy respectively. With known links between inactivity and obesity (Tremblay *et al* 2011), which affects 24%, costs the NHS £4.2 billion, and the economy £15.8 billion, the predicted levels of inactivity are staggering. All together alcohol, smoking, inactivity and obesity are estimated to cost the NHS over £11 billion and the English economy little shy of £50 billion. In a climate where demand for the NHS to save funds is high, it would seem beneficial to encourage healthy lifestyles not only for the benefit of individuals, but also to ease the burden on the NHS. The nation needs to adopt a sense of responsibility for their own health and the influence they can have on the next generation.

The decline of the global economy in recent years has led to rises in unemployment; a report published by the Office for National Statistics in December 2011 stated that unemployment in the UK had risen to 8.3%. The younger section of the working age population seem to have been hit the hardest with unemployment among 16 to 24 year olds reaching 22%, the highest rate since formal records began in 1992. For those who are unemployed, education and a chance to increase their employability may be favourable to claiming benefits and repeated job rejections. Between 2008 and 2011 figures published by UCAS have shown an overall increase of 18.9% for university applications. For those under 21 years old the increase in applications was 17.3%, for 21-24 years old it was 21.9%, and 25.5% for those over 24 years old. Some traditional students (under 21 years old) may view going to university as a given, and simply the next step after college. For

mature students (over 21 years old), making the decision to return to education can be a difficult one, often with the need to balance academic and family responsibilities. Whichever background students come from, and whichever route they take to a university education, they will want to, or should want to know that they are making the best decisions possible. The decisions of university, course, and study mode may be ones which will shape their future (Marsh and Cheng, 2008), and due to this many young adults are likely to be questioning the quality of the education they are paying for, and whether they will be satisfied with the education they receive and the outcomes they achieve. University students are our immediate future, they are the people who can inform and make changes to policies and the way we think and live (Steptoe *et al*, 2002a) and with the student population becoming more diverse (Kuh *et al*, 2006) there should be more scope for influence. Students hold new knowledge, and are an accessible group who, by their definition, are open to and willing to embrace new concepts (Gottlieb and Green, 1984). The population warrants research in order to inform how we might promote a healthy lifestyle that they in turn may pass on to the next generation via their work and/or their family lives (Oldenburg *et al,* 1997). Satisfaction and achievement may determine students' choices and successes post-graduation and the collection and publication of national statistics on these matters can not only influence future students choices of university, course, and study mode, but also assist universities to identify areas in need of improvement (Williams and Kane, 2008; Fielding *et al,* 2010).

For the purpose of this study, health behaviours are classified as physical activity, alcohol use, smoking, and illicit drug use. Educational satisfaction addresses both general and faculty specific factors, and academic achievement is measured by module grade.

In regards to physical activity in adults the Department of Health in the UK currently recommends the following

"Adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes (2½ hours) of moderate intensity activity in bouts of 10 minutes or more – one way to approach this is to do 30 minutes on at least 5 days a week. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or combinations of moderate and vigorous intensity activity. Adults should also undertake physical activity to improve muscle strength on at least two days a week. All adults should minimise the amount of time spent being sedentary (sitting) for extended periods." (2011).

In the UK the legal age to purchase alcohol is 18 years of age, from the age of 15 years it is legal to consume alcohol in a restaurant with a meal, and consumption away from licensed premises is permitted from the age of 5 years with parental supervision. The current advice on alcohol consumption from the Department of Health is

"The UK Chief Medical Officers (CMOs) recommend that men should not regularly drink more than 3–4 units of alcohol a day and women should not regularly drink more than 2–3 units a day. 'Regularly' means drinking every day or most days of the week. You should also take a break for 48 hours after a heavy session to let your body recover." (2011).

The legal age to purchase tobacco products, such as cigarettes, is 18 years of age, although it is legal to smoke at any age in the UK. Illicit drugs are classed as any of over 200 substances listed under the Misuse of Drugs Act 1971. The act aims to control drugs with no medicinal benefits such as cocaine, ecstasy, and marijuana, along with medical drugs which can be misused for recreational purposes, such as codeine, tranquillisers, and Methylphenidate (Ritalin).

While a wide variety of areas could be explored in a student population, this study will focus on the issues of health behaviours, educational satisfaction and academic achievement as described above. These particular behaviours were chosen as they are high profile aspects of student culture and are well supported by the literature in relation to academic achievement. In order to keep the data collection and resulting data set manageable, the issues will be explored in one UK university, on one of it's campuses, and across two faculties. The setting (which is further detailed on page 28) is a bespoke sports campus which stands alone from the rest of the university and has it's own social norms derived from the university sporting culture. It was selected for the study as it was thought that the students within it would be knowledgeable of current health recommendations. Settings of this type are under-investigated in the field of research and while, as previously mentioned, the behaviours to be explored have been repeatedly addressed by the literature this study aims to add to the literature by combining all of these behaviours together with the additional factor of educational satisfaction to explore their relationship with academic achievement in this unique environment. The research questions, objectives, and aims can be found at the end of the review of literature chapter (page 19).

2. Review of Literature

2.1 Physical activity in student populations

Epidemiological research (Meredith and Dwyer, 1991; Taras and Potts-Datema, 2005) has demonstrated that poor diet and levels of physical activity under national guidelines place children at risk for being overweight and obese and thus influence future health status. Correlates of physical activity in adolescents and young adults have been found to include consumption of fruit and vegetables, cigarette smoking, alcohol consumption, and marijuana use (Martinelli, 1999, Pate *et al*, 1996, Fredricks and Eccles, 2006). This is in addition to the correlates found in adult populations of age, gender, race, body mass index (BMI), level of education, body perception, and alcohol consumption (He and Baker, 2005, Paeratakul *et al*, 2002, Plotnikoff *et al*, 2004, Sanchez-Johnsen *et al*, 2004, Trost *et al*, 2002). In a study of US undergraduate university students Seo *et al* (2007) found that only 59% of students met the recommended guidelines for vigorous physical activity and 39% met the moderate physical activity guidelines. This supports the findings of Haase *et al*, (2004) who in an international study of university students found that levels of physical activity were mostly inadequate; however the study excluded students who were studying medicine or health-related topics as health beliefs and knowledge were also being assessed. Stock *et al* (2003) investigated health complaints and behaviours in three universities across Europe (Spain, Germany, and Lithuania). They found that Lithuanian students were more physically active, than students in Spain, who in turn were more active than the German students (inactivity rates of 1.7%, 10%, and 20.7% respectively). However there are three notable limitations to this study, two of which were acknowledged by the authors themselves. Firstly, the methods used to recruit participants differed in the Spanish university, where participants responded to campus advertisements rather than being approached to complete questionnaires in lectures as occurred in the German and Lithuanian samples. While the German and Lithuanian students did voluntarily complete the questionnaire, some may not have participated if there were not faced with the questionnaire and the researcher in their lecture rooms. On the same point the Spanish sample would only have consisted of students who took it on their own initiative to seek out the study to participate, resulting in a potentially bias data set. Secondly, each of the

three data sets were collected in different academic years (Germany 1995/96, Spain 1998/99, and Lithuania 1999/2000). This means that there was the potential for data to have been collected up to five years apart, which is a long time in a rapidly evolving area of research to make even indirect comparisons let alone the direct comparisons which Stock *et al* (2003) attempt to make. Thirdly, a limitation which the authors failed to highlight is that all the students studied different types of subjects. The Spanish participants mostly studied science and engineering subjects, German participants mostly business and law subjects, and Lithuanian participants mostly health-related subjects. The finding of the Lithuanian students being more aware of their health, when 41% of the sample were studying health related subjects compared with that of 9.5% and 0% in Spain and Germany respectively, is of little consequence. The fact that the Lithuanian sample reported fewer subjective health complaints than the other samples in all areas (with the exception of depression) is unsurprising. The authors themselves noted that those who are more aware of their health engage in more healthy behaviours, and the Lithuanian sample were indeed shown to have the least amount of alcohol consumption, smoking prevalence, and inactivity rates of the three samples. With these three points in mind it seems that the three samples are not at all suitable for direct comparison and would have been better presented as three separate descriptive studies which happened to use the same data collection instrument. Seo *et al,* (2007) also established that males participated in higher rates of vigorous physical activity than females but not moderate physical activity. This is supportive to previous research into university students (Lowry *et al,* 2000; Miller *et al,* 2005), indicating that there may be a need for gender specific intervention in this population.

Majority of research investigating links between physical activity and academic achievement seem to have focused on school aged students rather than university aged students (Tremblay *et al,* 2011, Trudeau and Shephard, 2008). However, as there are entry level requirements for UK universities, usually based on sixth form (age 16-18) academic performance, the evidence base may still be relevant to this study.

Faulkner *et al,* (2001) demonstrated that children and adolescents whose participation in physical activity is high tend to perform better on various measures of cognitive performance and academic achievement. When studying nearly nine thousand US school students, Grissom (2005), found that those students who performed better in a physical

fitness test also performed better on reading and mathematics SATs, with the association more evident for females. This was supported by Castelli *et al* (2007) who found that field tests of physical fitness tests were positively correlated to academic performance in third and fifth grade students. A review of papers published between 1966 and 2007 by Trudeau and Shephard (2008), showed no negative association between increasing curricular time spent on physical activity by an hour each day, despite that time coming from other academic sessions. They also state that there is a positive association between physical activity and academic achievement, although physical fitness did not show this association. In a longitudinal study following participants from seventh grade (12-13 years old) to their early twenties, Fredricks and Eccles (2006) reported that high school sports participation predicted academic adjustment at 11th grade (16-17 years old), they also found that participation in high school sports and outside sports clubs predicted educational status two years later.

In university aged students, Belch *et al* (2001) found that of first year students, those who used the student recreation centre ended the year with slightly higher GPAs than those who did not use the centre. This is despite centre users' entry level GPA being lower than non-users, indicating an improvement in academic performance. They also report that student recreation centre users were more likely to persist with their college careers than those who did not use the centre. Pietsch and Jansen (2012) found that sports students performed better on psycho-metrical mental rotation tasks than aged matched educational science students from the same university. This could be due to the need for a high level of spatial awareness required by many sports, for example, to know where team mates are situated to pass to, to know the angle or trajectory in which to receive or return a ball, to ensure the correct hand placement on a 10cm wide beam, or to know the blade is going into the water at the exact time as seven other crew members without looking. This type of awareness can be improved through practice and indeed the sports students in the Pietsch and Jansen (2012) study had had long term intensive training in their relevant sports. In support of Grissom's study on school students Huang *et al* (2009) found that, in undergraduate students majoring in physical education and exercise sciences, those who showed a higher level of physical fitness also had a higher GPA in the semesters prior to and in which the tests took place. Trockel *et al* (2000) reported that in university students, strength training had a positive predictive effect on academic performance and that time spent on strength

training had no effect, indicating that taking part in physical activity was not a distraction from academic studies.

2.2 Alcohol consumption in student populations

A meta-analysis by O'Malley and Johnston (2005) reported that alcohol use is higher among university students than an aged matched general population. The review reports that although alcohol intake increases in both populations after leaving secondary education, this increase is greater in university students and that they surpass their non-university counterparts. Support for these findings comes from the likes of Schulenberg and Maggs (2002), White *et al* (2006), Fromme *et al* (2008), and a publication by Johnston *et al* (2008) which reports the findings from the Monitoring the Future project. The paper states that university students consistently stand out as displaying a high rate of binge drinking, compared to the general aged matched population and school students, maintaining almost the same rate between 1993 and 2007 where other populations showed a decrease.

Hughes *et al* (2007) investigated the differences in alcohol consumption and negative experiences on a night out between those who only drink in a licensed venue and those who also drink at home prior to attending venues. They found that those who consumed alcohol before going out reported significantly higher alcohol intake and were more likely to be involved in violent behaviour. More than half of the drinkers in the study consumed alcohol before going out, yet there was no difference in consumption whilst out between those who did and did not drink before going out. Therefore those who consumed alcohol before going out consumed more alcohol over the course of an evening than those who only drank in licensed establishments, with those who did drink prior to going out being more than four times more likely to report consuming >20 units on an average night out. While the above study was conducted in the general population, the sample of 18-30 year olds it captured may well have included university students. In the UK, for some students, much of the university experience is focused on sports teams, and the social life that goes with them. This often includes alcohol consumption after competition, post-match or at a gathering commonly known as a 'circle'. If teams are lucky enough to have sponsorship or deals with local bars the usually weekly gatherings are held there, although for those who

do not, circles are often held in a team member's home. Irrelevant of location it is common for drinking games to be played; and if in a private location a 'bucket' is sometimes consumed by the team members in attendance. This is a large cocktail type mix of various types of alcohol which may include wine, spirits, alcopops and soft drinks brought to the location by each team member and combined in a large container, this is then consumed before going on to a licensed venue. This phenomenon could lend support to Hughes *et al* (2007), the likes of La Brie *et al* (2007) who reports that social camaraderie was the most frequently cited reason for alcohol consumption, and Wicki *et al* (2010) who in a review of 65 papers concluded that students mostly consume alcohol in social gatherings and for social enhancement. Also Martens *et al* (2006) found that intercollegiate athletes were more likely to consume more alcohol and binge drink, and Modric *et al* (2011) reported a significant association between alcohol consumption and sports participation in female Croatian students. And although those involved in sports teams are not necessarily on sports based courses, it is likely that a large number of those who are on sports courses participate in sports.

With the evidence claiming that students consume more alcohol than their aged matched peers, how does this relate to their academic achievement? There seems to be three schools of thought on the answer to this question. The first believes that high alcohol consumption leads to lower academic achievement; a second that feels the relationship begins with poor academic performance which in turn leads to increased alcohol consumption, and a third which feels that there is no association between alcohol consumption and academic achievement.

Evidence to suggest that alcohol consumption has a negative impact on academic achievement includes a study by Fleming *et al* (2005) which found that lower test scores were predicted by early use alcohol when comparing fourth, seventh, and tenth grade tests in the US (ages 9-10, 12-13, and 15-16 respectively). While in a college population, Singleton (2007) and Singleton and Wolfson (2009) found that alcohol consumption was significantly correlated to grade point average (GPA) even after the strongest predictors of SAT score and class rank were controlled for. Furthermore a study of over three and a half thousand first year college students in Belgium reported that those students who met criteria for alcohol dependence were significantly more likely to fail an exam which

allowed them to stay at the university (Aertgeerts and Buntinx, 2002). In addition King *et al* (2006) reported that increased adolescent alcohol use was able to identify those with a reduced likelihood of completing their college course or even attending college at all.

Many of the studies on alcohol consumption and academic achievement, including those above, have been subjective, mostly relying on self-reported alcohol consumption and often on self-reported achievement or performance. In a study using objective measures of both alcohol consumption and academic achievement, Thombs *et al* (2009) report that frequency of breath alcohol concentration (BrAC) above 0.08, mean BrAC, and maximum BrAC recorded had a statistically significant negative association with academic performance over a semester.

Support for the thought that it is poor academic performance which leads to increased alcohol use comes from Hayabakhsh *et al* (2011) who followed nearly three and a half thousand Australians from birth to aged 21 years. The researchers found that school performance at age 14 years predicted alcohol consumption and alcohol use disorders at 21 years of age. Children with a lower standard of school performance had an increased risk of consuming more than two glasses of alcohol per day, with a similar association between performance and alcohol abuse and dependence. This is supported by Crum *et al* (2006) who reported that first grade achievement in mathematics, truancy, and dropping out of school were predictive of later alcohol use disorders. Again Englund *et al* (2008) found that lower academic performance led to increased alcohol use in adulthood in males, although in contrast it was shown that for females, higher academic performance led to increased alcohol consumption. The latter would sit in agreement with Maggs *et al* (2008) who found that, when studying a sample over a 42 year span, greater academic achievement was associated with higher alcohol consumption in adulthood. Hatch *et al* (2007) also reported that higher childhood cognitive ability lead to a greater risk of alcohol abuse. Reasons for greater academic achievement leading to higher alcohol consumption may be related to success in employment. Those with 'white-collar' jobs may have the need to regularly attend business lunches or dinners in restaurants and consume alcohol with their meal. In addition, greater employment success is likely to equal a higher salary and potentially more disposable income for socialising.

Among those who found no association were Paschall and Freisthler (2003) who collected data from nearly five hundred college students to assess the effects of heavy alcohol use, alcohol related problems, and drinking opportunities on college GPA. After controlling for high school GPA and other demographic data none of the variables were shown to be significantly associated with college GPA. Another study by Carson *et al* (2007) found that while collegiate alcohol performance predicted absence from class it had no effect on academic performance. In another objective study looking at academic test performance by Howland *et al* (2009) participants drank either alcoholic drinks until reaching a breath alcohol concentration of 0.12g% or a taste matched placebo. The next morning participants took an academic test based on a lecture given the previous evening and performed a number of other tests. Results showed that the academic test taking was not affected by the previous night's alcohol consumption, however mood state, attention and reaction time was. However, level of alcohol use may be a factor in identifying relationships; as previously mentioned, Aertgeerts and Buntinx (2002) found a link between alcohol dependence and exam failure, yet in the same study, the association between alcohol abuse and exam failure was not found to be significant.

2.3 Smoking in student populations

Smoking has received major attention from the government within the last six years. This has resulted in a ban on tobacco advertising (an EU ban which came into force in 2005), a ban on smoking in enclosed public areas (coming into force in England on 1st July 2007), an increase in health warnings on tobacco packaging (introducing graphic images alongside warning text from 2009), and a rise in the legal age of purchasing tobacco products from 16 to 18 years of age (2009). Prior to the smoking ban, Steptoe *et al* (2002b) reported that between 1999 and 2000 the prevalence of smokers in a sample of European university students increased by 5%. In addition the belief that it was important for health not to smoke fell. A study of university students in thirteen European countries in 1990 and again in 2000 (Steptoe *et al*, 2002a) found that on the whole smoking prevalence increased, fruit consumption decreased, while levels of physical activity and fat intake did not differ significantly. They found that health beliefs weakened generally, with significant decreases in beliefs about smoking and nutrition. Across country samples, changes in beliefs linked

with changes in the frequency of behaviours, and there were large variations between country samples. Knowledge of the effects of fat consumption increased over the study period whereas awareness of the effects of smoking and physical activity was constant. Considering the increase in knowledge about health related behaviours in the decade between the two surveys it seems unsatisfactory that this knowledge does not appear to have filtered through to this educated group.

It may be thought that those studying health and sports related subjects would be more health conscious than other students. However, while Boland *et al* (2006) found a decrease in smoking levels of western medical students studying in Ireland between 1973 and 2002, a study by Piko (2002) was not so encouraging. Piko (2002) found that not only was smoking deemed acceptable in fourth year medical, nursing and pharmacy students in Hungary, but that a large number of these students smoked themselves with nearly half of the surveyed nursing students reporting smoking. Of even more concern is that these students agreed with positive statements about smoking such as "smoking helps you relax" and the disagreement with the statement "Healthcare professionals should provide a good example by their non-smoking behaviour". At a German university Keller *et al* (2008) found that 31% of law, teaching, and medical students were current smokers. They found that these students had a low readiness for behavior change although medical students were slightly more open to the idea. The Health Belief Model first created in the 1950's (Rosenstock, 1974) may attribute these attitudes to the fact that younger people often have low levels of perceived threat of illnesses, so while it is possible that the population are knowledgeable, they also may not perceive a risk at present, therefore would not adopt positive behaviours inconvenient to their lifestyles.

In regards to the impact of smoking on academic achievement, Cox *et al* (2007) reported that low academic achievement in the 12 months prior to the study of 9th – 12th graders was more prevalent in frequent smokers. This supports Jeynes (2002) who found that smoking frequently impacted on academic achievement in adolescents. He also reported that smoking, along with getting drunk and being under the influence of alcohol at school, was of the most consistent indicator of academic achievement. Schulenberg *et al* (2003) analysed data from the Monitoring the Future study and found that academic achievement was negatively associated with smoking, with eighth graders reporting low academic achievement also reporting higher levels of smoking. They also state that peer

encouragement and misbehaving in school were predictive of smoking at age 14 years and with increased tobacco use over time. This is in agreement with Bryant *et al* (2000) who, in 8th - 12th graders, also found that misbehaving in school and low academic achievement contributed to increased smoking over time. Also in agreement is Ellickson *et al* (2001) who reported that not only seventh grade smokers but also experimenters were at higher risk of low academic achievement and behavioural problems at school, and were more likely to be regular smokers in twelfth grade. The association does not stop with those who experiment with tobacco, those who are exposed to environmental tobacco smoke via maternal and/or paternal smoking could be predicted to have higher levels of test failure at both O-level and A-level standards (Collins *et al*, 2007).

2.4 Illicit drugs in student populations

Along with their results for smoking, Ellickson *et al* (2001) found that smokers and experimenters at seventh grade were more likely to regularly use marijuana, use harder drugs, sell drugs, and have multiple drug problems by twelfth grade. In a survey of college students Wish *et al* (2006) reported that those students who used ecstasy were significantly more likely to have used other drugs such as cocaine, LSD, and heroin in the past year than those who used marijuana but had not tried ecstasy.

Many studies focus on substance use as a collective, studies such as Cox *et al* (2007) who found the same results for marijuana as cigarette smoking. Also Jeynes (2002) who reported a significant effect on academic achievement from marijuana and cocaine use. Schulenberg *et al* (2003) are in agreement with this, stating that in 14-20 year olds, lower academic achievement, misbehaviour in school and loneliness lead to increased marijuana use. Zimmerman and Schmeelk-Cone (2003) found that marijuana use was related to a decreased likelihood of graduating high school in adolescents. They also reported that there was a relationship between marijuana use and decreased educational motivation, which in turn correlated to continued marijuana use. However when assessed separately they found that decreased educational motivation was not related to a decreased likelihood of graduation. In students from grades 10-12 Bryant and Zimmerman (2002) report that lower academic achievement and a higher rate of truancy was associated with increased

marijuana use. In a UK study of around 4500 11-16 year olds, Sutherland and Shepherd (2001) reported that 1.2% of 11 year olds were regular substance users, yet the figure in 16 year olds was much larger at 31.8%. They state that substance use was not only related to lower academic expectations and a perception of poor academic achievement, but also to social factors such as having been in trouble with the police and a lack of religion. However substance misuse is not restricted to illegal substances. In a study of college students Hall *et al* (2005) reported that 11% of females and 17% of males admitted to using prescription ADHD medication illicitly. Nearly half of the surveyed students knew people who used ADHD medication for non-medical purposes, and around one third knew where to get them if they wanted them. The student community widely believed that this type of medication promoted alertness and increased energy levels. Of the students admitting to illicit use, 42.3% stated they used it for academic purposes (for study or exam periods) and 12% stated it was for recreational use, with around 14% agreeing that stimulant use had long term benefits in relation to academic achievement. Substance misuse also spans cultures; Gau *et al* (2007) investigated substance use disorders in a study of over 400 twelve year old children in Taiwan repeating measures for three consecutive years. Of their sample, 19.6% developed substance use disorders, all of these showed disordered nicotine use, yet only one individual abused amphetamines. Instead 74% of those Taiwanese students deemed to have substance use disorders misused Betel, a vine leaf predominantly used in Asian cultures as a mild stimulant and for its medicinal properties. Gau *et al* (2007) went on to conclude that a good academic grade at age twelve was protective against both nicotine and Betel use disorders.

Satisfaction with the educational experience has also been linked to health behaviours as well as academic achievement. A study of Australian primary and secondary school children by McLellan *et al, (*1999) found that students that had positive perceptions of their school environment and who perceived their teachers to be supportive were significantly more likely to engage in health promoting behaviours.

2.5 Educational satisfaction in student populations

As a number of researchers have concluded (e.g. Wiers-Jenssen *et al,* 2002, Thomas and Galambos, 2004, Fielding *et al,* 2010) student satisfaction is a complex area. Research into

the area has attempted to make associations with many factors; these include teaching (Saroyan and Amundsen, 2001), assessment and feedback (Williams and Kane, 2008), study and learning styles (Allen *et al*, 2002), resources, facilities and environment (Lizzo *et al*, 2002), motivation (Roeboken, 2007), self-efficacy (Eom and Wen, 2006), organisation (Umbach and Porter, 2002), integration (Saenz *et al*, 1999), subject interest and pre-enrolment opinions (Watchel, 1998), overall satisfaction (Suhre *et al*, 2007), and demographics (Lee *et al,* 2000).

Fielding *et al* (2010) analysed data from the UK National Student (Satisfaction) Survey (NSS), which attempts to standardise the collection of satisfaction data in order to publish national statistics. The NNS is a 22 item survey independently conducted across all UK higher education institutions; it addresses teaching, assessment & feedback, academic support, organisation and management, resources, and personal development with item number 22 being a single question rating overall satisfaction. Fielding and his colleagues (2010) focused on data for nine science and engineering subjects, and found that not only were there large differences between subjects but also that there were different levels of satisfaction between factors. Organisation is an example of subject differences, in the Fielding *et al* (2010) data set there was around a 20% difference in number of students satisfied with organisation, with Human Geography students being most satisfied and Technology students being the least satisfied. An example of factor differences is that all courses reported high levels of satisfaction for resources (more than 80% of respondents were satisfied or very satisfied), yet all courses reported low levels of satisfaction for feedback (below 65% satisfied). The level of dissatisfaction with feedback is not new, Williams and Kane (2008) analysed data from institutional satisfaction surveys covering 1994-2007, and found that feedback, along with assessment, repeatedly showed poor levels of satisfaction, however they also found that satisfaction in these factors is gradually increasing due to institutions recognising this shortfall and taking action to improve matters.

Thomas and Galambos (2004), found that factors such as academic experience (faculty preparedness in particular), pre-enrollment opinions, and social integration had important influences on student satisfaction, but that campus facilities and services had little impact on student satisfaction and none of the demographic variables analysed were shown to be significant predictors. However, Jorgensen *et al* (2011) found that some demographic variables do influence satisfaction when looking into differences in levels of importance

and satisfaction between genders and students with or without disabilities. They reported that there were no significant differences in the importance of various factors of the educational experience in either gender or disability, but that there were differences for levels of satisfaction between those with and without disabilities. There were also gender differences in satisfaction, with males consistently reporting lower satisfaction, although on further examination Jorgensen *et al* (2011) found that the patterns in responses were similar for both genders, implying that males may simply have a tendency to score satisfaction scales lower than females rather than there being true differences in factors of satisfaction.

When investigating the constructs of satisfaction and perceived learning outcomes in online university courses, Eom and Wen(2006) satisfaction was affected by all six areas analysed. These areas were instructor feedback, instructor facilitation, learning style, interaction, self-motivation, and course structure. Yet, when analysing perceived learning outcomes this was influenced by only learning style and instructor feedback. Online or distance learning may be suitable for students with particular learning styles, however in a meta-analysis by Allen *et al* (2002) found that students preferred a traditional face to face education over distance learning with little difference in satisfaction between the delivery methods. However, the papers analysed were dated between 1988 and 1999 and many technical advances have been made since then which are likely to have improved the standard of online learning.

Satisfaction with teaching can be influenced by many factors including subject area, class size, workload, and lecturer personality (Wachtel, 1998; El Ansari and Oskrochi, 2006). Wiers-Jenssen *et al* (2002) found that in a study of satisfaction in nearly 10,000 Norwegian students, that quality of teaching had the most significant relationship to satisfaction. Students' satisfaction with teaching has been associated with learning and achievement since the late 1970's (Centra, 1977) and perceptions of the learning environment have been found to both directly and indirectly (through study approaches) influence academic achievement (Lizzio, *et al*, 2002). Lizzio *et al* (2002) also found that perceptions of students' current learning environment were a more positive predictor of academic achievement at university than prior academic achievement. In Thai nursing students, it was found that those with higher levels of satisfaction used the recommended study techniques and had greater academic achievement, and that students' perception of learning

had a positive effect on academic achievement (Pimparyon *et al*, 2002). This sits well with Thomas and Galambos (2004) who report that students who were satisfied with the educational quality they received also reported larger perceptions of intellectual growth, although GPA did not emerge as a significant predictor of overall satisfaction. Suhre *et al* (2007) looked specifically at students' satisfaction with their degree program rather than the institution and educational experience as a whole. They found that satisfaction had a positive effect on academic achievement, and low degree program satisfaction was linked to low study motivation.

El Ansari and Oskrochi (2006) reported that more satisfied students achieved higher final grades in public health courses and also report that full time students (study mode), smaller class size, and students studying for a BA degree (qualification aim) were significantly associated to higher levels of satisfaction, while entry qualification, academic term, and demographic factors (gender, ethnicity, disability, and age) had no significant impact. However, the same authors also published a paper in 2004, using data collected with the same instrument, in the same university, in the same academic year, and also with those on public health-related courses, which contradicts the findings related to four of the six factors above. El Ansari and Oskrochi (2004), also noted that class size was associated with higher satisfaction levels and that demographic factors were not. Where the papers disagree is that the 2004 paper showed no significant influence of qualification aim on satisfaction, and that the factors of entry qualification and academic term were significantly associated with greater satisfaction (GCSE entry and first term respectively). The 2004 paper even contradicts the 2006 paper stating that it is part time students that are more satisfied rather than full time students. Demographically the samples were almost identical (although heavily bias to white non disabled females) until it came to age (age ranges were identical at 18-59 years), the sample reported in the 2006 paper had <1% of traditional students (aged 21 years and under), compared with the sample reported in the 2004 paper where 32% were traditional students. What is unusual about the 2006 paper is that it makes no reference at all to the 2004 paper which, given the similarities in the samples and variables, seems ideal for comparison. Some of the differences between the papers are unusual and may be difficult to explain. For example in terms of study mode the 2006 paper had 58% of the sample studying full time and these were reported to be more satisfied, yet in the 2004 paper part time students were more satisfied despite there being significantly more full time students in the sample (77%). This would indicate that either

the part time students in the 2004 sample showed extremely high satisfaction, or that the full time students showed extremely low satisfaction in order for the variable to overcome the sample bias. Entry qualification is another unusual difference, in terms of percentages the figures are very similar, although small, for GCSE entry (2% in the 2004 paper and 3% in the 2006 paper). Yet this type of entry only showed a significant association in the 2004 paper with no significant association in entry mode at all in the 2006 paper. For something which represents so little of the sample to be significant is peculiar in itself but for the factor as a whole to be non significant in an extremely similar sample is worth noting. The differences in these papers could be due to module/subject (not analysed by the authors), sample size (1660 questionnaires from 73 modules in the 2004 paper and 343 questionnaires from 28 modules in the 2006 paper), or possibly due to the differences in analysis (principle component analysis was used to reduce the satisfaction data to 'meaningful constructs' in 2004 and hierarchical cluster analysis for the same purpose in 2006, both papers used MANOVA analysis thereafter). Even if the authors did not wish to analyse the differences between their papers formally, it would have added interest, if not strength, to the 2006 paper to make the comparisons above.

2.6 Academic achievement in student populations

Some researchers consider health, well-being, stress and psychosomatic complaints to be the influencing factors of students' achievement. Others argue that satisfaction with various aspects of the learning and educational experience are the things that matter (Lizzio *et al,* 2002; Pimparyon *et al*, 2002; and Suhre *et al*, 2007).

The effects of physical activity, alcohol consumption, smoking, drug use, and educational satisfaction have already been discussed in this chapter. In addition to the findings of the studies mentioned above, research by Faulkner *et al,* (2001) has also demonstrated that children and adolescents whose diets are nutritious and whose participation in physical activity is high tend to perform better on various measures of cognitive performance and academic achievement. Sigfusdottir *et al,* (2007) analysed cross-sectional survey data from a large number of Icelandic school children to investigate the relationship between health behaviours and academic achievement. Body mass index, diet and physical activity

explained up to 24% of the variance in academic achievement. Although this study will focus on the impacts of health behaviours and educational satisfaction, the researcher felt it important to highlight some of the other factors that may influence academic achievement and that is the purpose if this section.

Psychological aspects of self-efficacy and motivation have consistently shown effects on academic achievement; this is displayed in a meta-analysis of 109 papers from 1984 to the early 2000's by Robbins *et al* (2004) where academic self-efficacy and achievement motivation predicted college GPA even when controlling for prior academic achievement and socio-economic status in US colleges. McKenzie and Schweitzer (2001) also found evidence of the predictive ability of self-efficacy on academic achievement at university in an Australian population. A study included in the Robbins *et al* (2004) meta-analysis was that of Chemers *et al* (2001), they reported that not only was self-efficacy strongly related to academic performance but also optimism. This is supported in a recent study by Sit *et al* (2011) who found that both male and female students, who perceived their academic performance to be high, were more optimistic than those who had low perceived academic performance. However, in the same sample Sit *et al* (2011) reported that only 42% of students correctly perceived their academic performance and that optimism was not related to actual academic performance. In addition, for students who believed that their education was under their own control reported greater academic achievement than those who believed that external influences were responsible (Carden *et al*, 2004).

Behaviour and attention have also shown associations with academic achievement. Fleming *et al* (2005) analysed behaviour and social skills in seventh grade (age 12-13 years), which were determined by reports from parents, teachers and the students themselves, with self-reported grade and standardised test outcomes in tenth grade (age 15-16 years). They reported that lower academic achievement was associated with more attention problems, negative behaviour of peers, and disruptive and aggressive behaviour, and that higher academic achievement was correlated to more school bonding, and better social, emotional, and decision making skills. Breslau *et al* (2009) gave support to this concluding that attention problems at age six were predictive of academic achievement at age seventeen.

Thinking and learning styles have been found to relate to academic achievement; Cano-Garcia and Hughes (2000) found that those who prefer to work as individuals rather than partake in group work achieved more academically than those who did not. This is

supported by Plant *et al* (2005) who reported that those who were more focused in their study time (alone in the library rather than in more sociable study groups) achieve a greater quality of studying and higher GPA's.

2.7 Summary

In general the evidence outlined above implies that physical activity levels, smoking, and illicit drug use are displayed in variable levels in higher education student populations across the world, however, alcohol consumption seems to be high in this population in majority of nations. The evidence suggests that academic achievement can be influenced by many individual factors or varied combinations of any number of factors; and the same can be said for educational satisfaction. It is unusual for the factors of health behaviours, educational experience and academic achievement to be analyses in a single study, and it is that which the current study hopes to achieve.

2.8 Research Questions, Objectives, and Aims

The current study explores the status of health & lifestyle behaviours, subjective health complaints, and satisfaction with the learning experience of undergraduate students in the University of Gloucestershire's Faculty of Sport, Health & Social Care, and will attempt to establish links to academic achievement.

Research Questions
1) What are the current lifestyles and health behaviours of students?
2) How satisfied are students with their educational experience?
3) How do current lifestyles, health behaviours and satisfaction link to academic achievement?

Research Objectives
1) To assess the current lifestyles and health behaviours of undergraduate students in the University of Gloucestershire's Faculty of Sport, Health & Social Care.

2) To assess the level of students' satisfaction with the educational experience in that faculty.

3) To determine the association of lifestyles, health behaviours, and satisfaction with their educational experience on academic achievement.

Aims

1) Investigate health & lifestyle behaviours across several analytical axes (e.g. age, gender, year of study, department within Faculty).

2) Investigate the satisfaction of students with learning experience across several analytical axes (e.g. age, gender, module subject, year of study, department within Faculty).

3) Assess the combination of factors of health & lifestyle behaviours and satisfaction with the leaning experience that explain student achievement in their educational courses.

3. Methodology and Methods

Epistemology, theoretical perspective, methodology, and methods should all be considered when designing and carrying out research (Clough and Nutbrown, 2002). These concepts are the foundations of the research process (Salazar *et al*, 2006), and collectively form the background knowledge and reasoning of why certain approaches and techniques are used for certain types of research (Crotty, 2003). For every piece of research that is developed, all of the above concepts have had some sort of influence. This influence is regardless of a researcher's familiarity with the concepts, and with or without their conscious knowledge. The concepts inform one another and are grounded within one another. Although the chain begins with epistemology, those new to the philosophy of, and approaches to research, may find it easier to start with the more comfortable areas of methods and methodology and work backwards in order to arrive at their initial philosophical stance (Clough and Nutbrown, 2002).

3.1 Epistemological Approach and Theoretical Perspective

Epistemology has been construed as the nature and acquisition of knowledge (Crotty, 2003); it forms a researcher's outlook of the world and how they behave and work within it (Denzin and Lincoln, 2005). This branch of philosophy is concerned with the nature and scope (limitations) of knowledge (Borchert, 1967). The main two epistemological stances are objectivism and subjectivism which sit at either end of the epistemological scale, with a third stance of constructionism covering the middle ground. Objectivism, as the name suggests, derives from the principle that human knowledge and values are objective (Rand, 1986). The type of researcher that takes this stance believes that meaning, and therefore meaningful reality, exists outside and regardless of consciousness (Somekh and Lewin, 2005). It is believed that items carry their own intrinsic meaning and that those meanings exist regardless of knowledge and are just waiting to be discovered. For example, a tree is still a tree with all meaning attached whether anyone knows it is there or not (Crotty, 2003). The methodology of the current study does not lend itself to the approach of subjectivism nor constructivism therefore there is no need to address the details of these

approaches in this research. Once an epistemological approach has been established a researcher can then go on to determine their theoretical perspective.

A theoretical perspective is the philosophical stance which informs the methodology and provides the context for its processes and grounds its logic (Crotty, 2003). Theoretical perspectives make assumptions about society and those who work under each perspective apply these assumptions to their research through the methods and methodologies they use. Positivism (or logical positivism) stems from the epistemology of objectivism, the belief that meaning exists prior to and independent of consciousness is carried down into this perspective. Positivistic researchers deal with 'facts' and largely investigate cause and effect relationships. This perspective claims to be completely objective (in the form of researchers not allowing their interactions and experiences of the world to affect their judgement) and does not deal with nor concern itself with feelings and beliefs. Positivism separates fact (numbers and statistics) and value (value in the form of the importance a person bestows on a knowledge or concept such as religion). Positivists rely heavily on quantitative methods of research and hold the view that 'real' properties must be quantifiable in order to be understood and those that are not do not warrant research (Brustad, 2002). In this way it is very closely linked to empirical science (Hollis, 1994) sharing the opinion that knowledge must be verifiable i.e. testable. Positivism can been criticised for regarding humans as machines, and not considering thoughts and feelings (Bryman, 2001). Although it may be a valid criticism, it does not detract from the reality that physiologically the human body responds how it responds. The response may be expected or in line with homeostasis, e.g. increased heart rate on physical exertion or the release of insulin to balance high blood sugar levels, or it may be atypical due to some sort of illness or disease. Emotions may indeed affect this response however the effect is nearly always indirect and as a result of another physiological reaction such as the release of adrenaline. The world viewed by positivist science is not the everyday world we experience as human beings; it is an extreme view which requires strict control over the properties it studies in order to fulfil its claims of absolute objectivity and certainty (Cousins, 2002) and this level of control cannot occur in the everyday world in which we live. Therefore it could be seen that there is a gulf between what positivist science claims to do and what it actually does.

Post-positivism is seen as a more modest form of logical positivism, it proposes probability rather than certainty, and claims a level of objectivity rather than absolute (Crotty, 2003). Post-positivism arose from scientists such as Werner Heisenberg and Niels Bohr questioning the claims of certitude made by positivist science (Crotty, 2003). Those who take the post-positivistic stance do not oppose logical positivism but reject the extensive claims it makes in regard to certainty and objectivity. Another scientist that rejects the 'stiffness' of logical positivism is Karl Popper. Despite his early association with the group of positivist philosophers and scientists known as the Vienna Circle, Popper offers his own view of human knowledge. This view arose from Popper's unease with the where the distinction between empirical science and other fields of study lies (Popper later called this his 'problem of demarcation'). Popper (1963) replaced verification of knowledge and theories with falsification, where assumptions or hypotheses are created and then researchers try to prove them wrong. Thereby leading to the idea the theories should only be provisionally accepted as true, somebody could always disprove a theory.

3.2 Methodology

One of the methodologies employed in the current study is epidemiology. Epidemiology addresses health in various populations and the prevalence and determinants of health states in these populations. Findings can then be applied to prevent and control health issues (Last, 1988). This type of research came to the fore in the late 1940's in response to a heart disease epidemic in the mid twentieth century. Epidemiology can also be descriptive, this type of epidemiology research has been described by Last (1988) as making general observations concerning the relationship of diseases to basic characteristics such as age, sex, occupation, or geographic location. Suggesting that the more we know about the population a disease affects the more likely we are to be able to address it.

Descriptive research is another methodology used in the study. It is the study of status and is widely used in education and the behavioural sciences (Hatch, 2002). Its value is based on the idea that problems can be solved and practices improved through objective and thorough description (Thomas *et al*, 2005). The most common descriptive methodology is survey research, where the researcher usually seeks to determine present practices or

opinions of a specified population. Common methods of survey research are questionnaires and interviews, which are essentially the same except for the actual administration of questions.

Questionnaires and interviews are both useful methods for collecting data, and each may be more appropriate than the other for use in different studies. The most suitable method for each piece of research is often influenced by the study aims and outcomes, proposed sample size, and time restrictions of the study. It may also be appropriate to use both methods in some studies, for example where a researcher aims to gain an overall view of a subject but would then go on to follow up areas which appear to have a stronger effect. Questionnaires can be used to gain a large amount of data, administered to multiple participants at one time, do not need the researcher to be present therefore can be completed via post or email, and require little experience to administer. However questionnaires tend to lack depth in the responses they gain due to closed questions and limited space to answer open questions. It is also difficult to clarify any questions which the participant does not understand when the researcher is not present during data collection. Questionnaires rely on the participants self reports of behaviours or attitudes and therefore may be susceptible to demand characteristics, bias data and false recall. In contrast interviews offer the chance to gain in depth, 'rich' data. Interviews benefit from the fact that the researcher can create a rapport with the participant and observe reactions such as body language during face to face data collection. Furthermore, questions can be clarified and reworded to ensure understanding by the participant through techniques such as recapping. However, interviews can be time consuming, require skill and experience to perform effectively, and often need to be transcribed before analysis can be performed. As the current study was subject to time constraints, addressed many factors and aimed to obtain a fairly large data set, it was determined that questionnaires would be the more suitable method for meeting the objectives set for the study.

The current study is a descriptive, cross-sectional view of health and lifestyle behaviours and educational satisfaction and their relation to academic achievement in undergraduate students at a UK university. The term health and lifestyle behaviours is broad and for the purpose of this study it is a net term for physical activity, alcohol use, smoking, drug use, and socio-demographic details. However, as the questionnaire administered was part of a parent study, data on other themes were collected at the same time. The themes for which

data were collected but not used for this study were- food intake and eating behaviours, subjective health complaints (psychological and physiological), stress, body satisfaction, living arrangements, and additional socio-demographic details.

In this study the term educational satisfaction covers a range of aspects. These include teaching style, standard and consistency, delivery of lecture content and of the module as a whole, assessment, interaction and feedback. It also includes satisfaction regarding facilities, equipment and resources, module structure (time of day of lecture, additional practical/seminar sessions), workload and subject interest.

3.3 Tools

The Health and Lifestyle Behaviours questionnaire consisted of questions on health, food intake, body image perception and eating behaviours, substance use, physical activity, and socio-demographic data. The questionnaire consisted of 68 questions (total items n=141) and was originally compiled from a variety of published and validated sources, for example National Health Interview Survey (2007), WHO-Five Well-being Index (1998), American College Health Association Study Well Health Assessment, California Health Interview Survey (2005), CAGE (Ewing, 1984), along with questions specifically created for the target population of this study. The questionnaire has been used in previous studies (Mikolajczyk *et al*, 2008, Stock *et al*, 2007). Some alterations and additions were made for use in the current study, which are detailed throughout this section.

To ascertain levels of physical activity the questionnaire asked how many times participants had done vigorous physical activity, moderate physical activity, and walked for more than ten minutes at a time in the last seven days. Vigorous physical activity was defined as 'activities that take hard physical effort and make you breathe harder than normal to a point where you cannot hold a conversation'. Moderate physical activity was defined as 'activities that take some physical effort and make you breathe harder than normal to a point where you can hold a broken conversation'. These definitions were altered from the original questionnaire as these descriptions are often used in relation to physical activity in the UK. Participants were also asked how much time they usually spent

doing the activities above, along with the amount of time spent sitting on a typical day, with boxes for hours and minutes and an option of 'Do not know/not sure'. Questions on sports participation were added covering type of participation (recreational or competitive) and level of competitiveness (local/university, regional, national, or international). This was because the University of Gloucestershire has a strong sports club culture and has a number of elite athletes enrolled on courses within the Faculty of Sport, Health & Social Care. Regular training and competition has the potential to impact on physical activity levels, as would the level of competitiveness.

In order to address substance use participants were asked questions on frequency of tobacco smoking (with the responses of 'Daily', 'Occasionally', and 'Never'), drug use (with the response options of 'Yes, regularly', 'Yes, but only a few times', and 'Never'), and alcohol intake. Alcohol questions included frequency (response options of 'Several times a day', 'Every day', 'Several times a week', 'Once a week', 'Less than once a week', and 'Never'.), to what extent of drunkenness they were last time there were drunk (on a scale of 1-10), and how many times they had consumed five or more drinks in a row over the last 30 days (response options 'None', '1', '2', '3-5', '6-9', and '10 or more'.). Five or more drinks have been repeatedly classed as 'binge drinking' (BMA, 2003, AlcoholConcern, 2004, Gill, 2002), and examples of what classes as one 'drink', such as half a pint or a shot of spirits, were given including measurements in milliliters.

Participants were also asked about their studies, including year and discipline and standard personal questions such as age and gender.

Questionnaire section	No. of questions (No. of items)	Example question	Example response
General health	7	To what extent do you keep an eye on your health?	'Not at all' 'Not much' 'To some extent' 'Very much'
Health complaints & strains	5 (15)	How many people do you know- including your family and friends- who support you whenever you feel down?	'None' 'One person' 'Two-three persons' 'More than three persons'
Diet, eating	16 (68)	Have you ever… eaten consciously to allow your	'Currently' 'In the past'

behaviours & body image		muscles to grow?	'Never'
Physical activity	10 (11)	Do you take part in sporting activities?	'No' 'Yes, recreationally' 'Yes, competitively'
Substance use	13 (18)	In the last four weeks, how many times have you been drunk?	'None' '1 to 2 times' '3 or more times'
Studies & socio-demographic	19	How do you rate your performance in comparison with your fellow students?	'Much better' 'Better' 'The same' 'Worse' 'Much worse'

Many of the courses in the faculty offer a high level of flexibility in module choices; as a result students registered on the same course are unlikely to graduate with exactly the same degree in terms of subjects studied. For this reason the satisfaction questionnaire was chosen to be module specific rather than course specific. The satisfaction questionnaire addressed the students' satisfaction with their learning experience in reference to the module in which the questionnaire was delivered. It included questions on aspects of the module such as content, delivery, standard of lecturers, availability of materials, assessment, work load, and standard of equipment/facilities. The questionnaire has a scale of 1-5 where 1 is the most positive response to a statement and 5 is the most negative response. The questionnaire has previously been published and validated in two forms (Kerridge and Mathews, 1998; El Ansari and Oskrochi, 2006) and also has additional questions applicable to the faculty targeted in the study. The additional questions for this study (Q20-22, Q25) covered areas such as previous subject interest, general understanding of the module subject, time of day of lecture, and general expectations of the module. These questions were influenced by a review by Wachtel (1998), which reviews and outlines the many different aspects that contribute to student satisfaction. Faculty specific questions (Q19, 23, 24, 26, 29) asked about the effect of practical teaching elements on subject understanding, whether lectures would benefit from additional practical or seminar sessions, the consistency of teaching standards, standard of equipment/facilities available for the module, and the contribution of the module to the students' course of study. Faculty specific questions were added to reflect the structure and delivery of courses and the practical elements of many of the courses.

The full questionnaires used in this study can be seen in Appendices B and C.

3.4 Participants & Setting

A total of n=641 students from the University of Gloucestershire's Faculty of Sport Health & Social Care took part in the study by answering at least one questionnaire, during the 2008/09 academic year. All students were registered on undergraduate courses within the faculty and had at least one opportunity to complete both questionnaires during the academic year. The Faculty is based at Oxstalls campus in the city of Gloucester and offers twenty undergraduate courses. The faculty is split into two departments with the Department of Sport & Exercise hosting eight of the undergraduate courses and the Department of Health & Social Care hosting the remaining twelve courses. This faculty was targeted because it is a bespoke sports campus which has it's own social norms derived from the university sporting culture. It was selected as all students within the setting should be aware of and invested in the need for a healthy lifestyle given their choice of course. Of the 1,611 (1,188 full time and 423 part time) students registered for the 2008/09 academic year 380 students completed the health behaviour questionnaire, 607 students completed the satisfaction questionnaire, with 346 students completing both questionnaires giving response rates of 23.6%, 37.7%, and 21.5% respectively. The sample size did not have a set limit prior to data collection and the final sample was gained through opportunity. To maintain a consistent data set the sample taken forward for analysis consisted only of those students who had completed both questionnaires (n=346).

3.5 Pilot study

Thomas *et al* (2005) advise that pilot studies are essential in survey research in order to identify potential problems which may occur. Therefore a small pilot study was carried out with five postgraduate research students, four of which had been previous undergraduate students in the faculty. The purpose of the study was to judge the amount of time required to complete the questionnaires, to discuss areas which the pilot participants felt may impact on satisfaction (given their personal experience of undergraduate study within the faculty), and to highlight any issues relating to the wording and understanding of questions. The

latter particularly focused on any questions that were created for the target population and not previously validated. Results from this study indicated that the questionnaires took approximately 20 minutes to complete (13 minutes for health and 7 minutes for satisfaction). These timings suggested that 25-30 minutes were required for each session of data collection to allow for explanation, distribution, completion and collection of the questionnaires. The participants agreed with the researcher that equipment/facilities and the provision of practical/seminar sessions to accompany certain modules may have an impact on students satisfaction levels. They also highlighted that having multiple lecturers within a module may result in some parts of the module being delivered to a higher standard than others, therefore a question was added to address this. Any questions which were highlighted as potentially confusing were discussed between the five participants and the researcher and altered where appropriate. These alterations and any additional questions are detailed in the Tools section.

3.6 Procedures of data collection

Permission to enter lectures was sought from the module tutors. Where the lecture proposed was not being taught by the module tutor, individual members of the module team gave permission. Students were approached either at the beginning or end of lectures determined by individual lecturers' preference, so as to cause as little disruption as possible and invited to complete the questionnaires. Data were collected from a total of 43 modules in the second semester (January to May). Collection began in February to ensure that students had time to form an opinion of the module and so that any Christmas/New Year/New term celebrations did not impact on the alcohol intake questions. Towards the end of the semester, when near maximum data had been collected from lectures, students were approached in open areas such as the library. The questionnaires were also emailed to all undergraduate students in the faculty in an effort to include those students who do not attend lectures and avoid sample bias. Data were linked using the student identification numbers provided and grades were collected via the University of Gloucestershire's SITS academic student records system. This system allows academic staff to securely enter assessment grades for the modules they teach on. The data are entered locally and then held on a central database.

3.7 Ethical considerations

Consideration of ethical issues such as informed consent, voluntary participation, confidentiality, and anonymity is important when conducting research in order to protect all participants from harm (physical and psychological) (ESRC, 2005). Although none of the participants in the current study were under 18 years of age, the researcher felt that due to the sensitive nature of some data, that a Criminal Records Bureau check would be appropriate. This check ensures that a person has no past or present criminal convictions related to children or vulnerable adults; the researcher was given full clearance. The parent study which includes much of the same aspects of the current study gained ethical approval by the University of Gloucestershire's Research Ethics Sub-Committee. A proposal for the current study was examined and approved by the University Research Degrees Committee.

Students were asked to participate rather than told to, ensuring that participation was voluntary. The students' right to withdraw from the study was expressed on the information sheet given out with each questionnaire and reinforced by the researcher collecting the data. Students were reassured that their responses were confidential, therefore did not influence their grades, and that only the research team had access to raw data. Rather than having separate informed consent forms students were told that by completing the questionnaires they were seen to be giving implied informed consent to taking part in the study. To ensure anonymity students were asked to give their registration number on each questionnaire instead of their names. Registration numbers were also required in order to link health behaviour and satisfaction data and to retrieve students' grades. Grades were only considered for the modules in which the students completed a satisfaction questionnaire. Once all data was linked student identification numbers were removed and participants were not identifiable to anyone. As the data collected includes information on the health status of living persons it requires handling and storage in accordance with the Data Protection Act (1998). All data has been kept secure and confidential, by keeping the data stored in a locked metal filing cabinet in accordance with University Regulations and the Data Protection Act.

3.8 Analysis of Data

Data underwent statistical analysis using SPSS for Windows Version 19.0 (SPSS Inc., Chicago Ill.) For the purpose of this study 15 questions from the health questionnaire were selected to address the research questions. These related to physical activity, alcohol use, smoking, drug use, general demographics. Responses for six of the physical activity questions were recalculated (frequency x duration) to become three scores which represented average time spent of various intensities of physical activity during a week. To reduce the 26 item satisfaction questionnaire data to a more manageable size for analysis, scores were added and a mean calculated to give a new overall satisfaction score. These steps resulted in 13 independent variables and one dependant variable for analysis. Standard forced entry multiple regression was used to assess the ability of the 13 independent variables to predict the dependant variable of academic achievement, which in this study is represented by module mark. A forced entry method was chosen over a hierarchial method as no previous research has combined satisfaction and lifestyle to predict academic achievement, therefore there is no sound literature on which to base oredered decisions. A stepwise method was ruled out as SPSS may change the order in which variables are analysed if additional data was added to the model, this would mean that the analysis would not be replicable. Significance level was set at $p \leq 0.05$. Frequencies and the descriptives of mean and standard deviation are used for the remainder of the statistics reported.

3.9 Summary

It could be seen that while the issues addressed in this study can be interrelated, they also derive from different disciplines. The disciplines may disagree on how research should be conducted and the methodologies and methods that should be used; this can make choosing the most suitable approach difficult. The topics covered in this study, health, educational satisfaction, and academic achievement could be looked at from any of the approaches discussed, all have their advantages and potential to contribute to the research area and the body of literature. There is scope for research aiming to make general statements, inform

national policies and develop health promoting initiatives. This could be for university students across the board or to gain rich data for in depth analysis of situations and the feelings and attitudes of the students in the specific faculty being investigated. The University of Gloucestershire's Faculty of Sport, Health & Social Care currently has approximately 1600 undergraduate students. In order to cover all of the aspects and reach a wide a range of students as possible it was decided that the current study should be a cross sectional view of the status of health and lifestyle behaviours, and satisfaction with the learning experience of the students in the 2008/9 academic year. Due to this the researcher makes no attempts to forecast the direction of outcomes or predict cause and effect relationships. The current study uses quantitative research methods and will apply statistical analysis to the data collected.

4. Results

4.1 Subjects

After eliminating data for those who had not completed the questionnaires fully and those who had not received a grade due to failure to submit, the final number of participants was n=339. First year undergraduate students made up 49.9% of the sample, second year students 27.3%, third year students 22% and 0.9% were in their fourth or fifth year of study. Participants were evenly distributed between gender (Male 51.6%, Female 48.4%). Mean age was 22.3 (± 6.9), the youngest student was 18 years old and the oldest student was 54 years old, and 23% of students were classed as mature (>21 years old).

4.2 Physical activity and sports participation

Participants were asked about their physical activity levels in the previous week. The average amount of days on which participants undertook various classifications of physical activity and average time spent on each on one of those days were calculated to give a figure of average time spent per week. Participants reported that they spent an average of 242 minutes on vigorous activity per week (± 434). For moderate physical activity mean time was 183 minutes across the week (± 423). And the mean time spent walking for more than ten minutes was 364 minutes (± 927). Reported time spent sitting on an average day showed a mean of 183 minutes (± 259) per day. Some students reported no participation in physical activity at all; 26% did no vigorous physical activity, 34.7% did no moderate physical activity, and 26.6% did not walk for more than ten minutes in the previous week. In regards to sports participation 11.8% did not take part in sport, 29.9% took part recreationally, and 58.3% were competitive. Of those students who participated in competitive sports 66.3% competed at university and/or local level, 28.4% at regional level, 3.2% at national level, and 2.1% at international level.

4.3 Substance use

When asked about alcohol consumption over the previous three months 2.4% reported never drinking alcohol in that time period, 23.3% reported less than once a week, 27.8% once a week, 43.6% several times a week, 1.5% daily, and 1.5% consumed alcohol several times a day.

Students were then asked about binge drinking, which has been repeatedly classified as consuming five or more alcoholic drinks in a row (Wechsler and Nelson, 2008), over the previous 30 days. Students who reported no incidences of binge drinking represented 19.9% of the sample, 24.4% reported binge drinking once or twice, 27.7% on 3-5 occasions, 15.8% on 6-9 occasions, and 12.2% on 10 or more occasions in the previous 30 days.

In regards to how drunk they were, on a scale of 1 to 10, on the last occasion that they were drunk, the average level of drunkenness was 5.78 (± 2.7). Selecting 1 on the scale represented 'Somewhat merry only' and selecting 10 represented 'Heavily intoxicated to the point of being unable to stand on my feet'; 5.9% of participants selected 10 for this question.

The majority of students in the sample had not smoked tobacco products in the previous three months (79%). Only 9.2% of the sample smoked daily, with the remainder (11.8%) smoking occasionally. Most of the subjects had never used illicit drugs (78%), with 19% reporting having tried them a few times and 3% reporting regular use.

4.4 Educational Satisfaction

In order to reduce the 26 item satisfaction questionnaire to a more manageable overall satisfaction score an average was taken. This then gave a mean satisfaction score for the sample of 2.3 (±0.6). The lowest satisfaction score was 1.1 and the highest score 3.8 indicating a moderate to high level of satisfaction in this sample (the questionnaire had a reverse scale and a lower score indicated higher satisfaction).

4.5 Academic Achievement

In the sample, module mark ranged from 4 to 91%, with the mean mark for those in the School of Sport & Exercise at 54.9%, and those in Health & Social Care at 58.3%. The grade equivalent for percentage marks at the University of Gloucestershire and percentage of students in the sample achieving those grades is given in Table 1

Table 1: University of Gloucestershire marking system

Module mark (%)	Module grade	Students achieved (%)	Note
100-70	A	10	
60-69	B	26	
50-59	C	35.4	
40-49	D	20.9	
30-39	R (Referred)	5.9	Students can retake assessment
1-29	F (Failed)	1.8	Students cannot retake assessment
0	F (Failed)	Excluded from sample	Due to failure to submit

4.6 Associations with Academic Achievement

Data were checked for normality, linearity, multicollinearity, and homoscedasticity and all were found to be in normal ranges. $R^2 = .088$. This model explains 8.8% of the variance in academic achievement in this sample.

Table 2. Associations with Academic Achievement.

Model	Standardised Coefficients Beta	Sig.	Correlation (partial)
(Constant)		**.000**	
Average time sitting	-.127	**.020**	-.131
Smoking frequency	-.064	.288	-.060
Drug use	-.042	.483	-.039

Alcohol frequency	.134	**.044**	.113
5+ drinks in a row last month	-.182	**.012**	-.141
How drunk last time	.072	.274	.061
Year of study	.143	**.009**	.145
Age	.131	**.023**	.124
Gender	-.029	.620	-.028
Satisfaction	-.165	**.003**	-.167
Vigorous exercise	-.097	.092	-.094
Moderate exercise	.077	.172	.077
Walking	.029	.589	.030

Significant correlations (p≤0.05) are marked in bold type.

With a significance level of $p \leq 0.05$ Table 2 shows academic achievement to be positively associated with frequency of alcohol consumption, year of study, age, and educational satisfaction (although satisfaction is shown as negative in Table 2, the questionnaire had a reverse scale and a lower score indicated higher satisfaction). There were significant negative associations with average time spent sitting per day, and binge drinking. The strongest association was with educational satisfaction (p=0.003) and the weakest significant association was with frequency of alcohol consumption (p=0.044). Only one of the four physical activity variables reached a level of significance, average time sitting per day (p=0.020). Similarly only two of the five substance use variables reached a level of significance, binge drinking (p=0.012) and frequency of alcohol consumption. The demographics of age and year of study were shown to be significant predictors of academic achievement (p= 0.023 and 0.009 respectively) yet gender was shown to be the least associated variable of the 13 analysed (p= 0.620).

5. Discussion

5.1 Physical activity in student populations

The current study found no significant associations of vigorous physical activity, moderate physical activity, nor walking in relation to academic achievement, a finding which opposes that of much of the published literature (e.g. Belch *et al*, 2001; Faulkner *et al,* 2001; Grissom, 2005; and Huang *et al*, 2009). The sample showed large variations in levels of physical activity of all intensities (page 33); this may be, in part, due to participants coming from two rather different schools of study within the Faculty. Courses within the School of Sports and Exercise often require students to participate in physical activity during practical lectures and assessments, whereas courses in the School of Health and Social Care tend to be largely theory-based, meaning students are mostly seated throughout the lecture. With lectures likely to last between one and two hours, practical lectures would have a significant impact on levels of physical activity per week. In comparison, theory lectures, which may be longer, would have a similar impact on time spent sitting, which also showed large variations (183 minutes ± 259). If this is the case then it would be expected that physical activity levels would not have a significant effect on academic achievement as this would imply that those on more practical courses would achieve better grades than those on more theory-based courses. This would be in effect saying that sports students are more academically adept than social students or that sports degrees are easier to attain than social degrees, neither of these statements would be justified given that in the average grades in each school were evenly matched with the average grade for Sports & Exercise courses at 54.9% and 58.3% for Health & Social Care courses. Another factor which may heavily influence physical activity levels is sports participation. The majority of students in the study participated in sporting activities, with over half being competitive; training sessions and competition would increase the level of physical activity performed per week, possibly by several hours, especially for the 33.7% of competitive sports participators who represented their sports at regional, national, or international levels. Whether higher involvement in sports has a negative effect on study time is debatable. It has been previously noted that time spent on physical activity did not detract from academic studies nor impact negatively on academic achievement (Trockel *et al*, 2000, Trudeau and Shephard, 2008). However Pfeifer and Cornelißen (2010) reported

that those participating in sports at a competitive level did not reap any extra benefits academically than peers who participated in sports at a recreational level, indicating that students may not be able to dedicate large amounts of time to both academic activities and competitive level sport. Time spent sitting was the only physical activity variable to show a significant association with academic achievement. The association was a negative one, and while vigorous exercise was not shown to be significant, it also showed a negative association. These factors could be representative of inactivity and high level sport involvement respectively. Although not significant, there was some level of positive associations between moderate exercise and walking. The fact that the physical activity factors disagree in their direction of influence may suggest support for some of the studies highlighted above, but that the variations were too large for the associations to be significant in this sample. While no significant association was found between exercise and academic achievement in the current study, the sample did show high levels of inactivity; with figures similar to those of Seo *et al* (2007), 65% of students did not meet recommended levels of moderate physical activity in the previous week, and 35.4% did not meet recommendations for vigorous physical activity (recommended levels are shown on page 2). Inactivity has long been associated with poor health, and if the inactivity rates on a campus where students have easy access to a range of facilities including a sports hall, fitness studio, and fitness suite, are representative of the entire student body, intervention strategies should be implemented to encourage the use of the widely available facilities.

5.2 Alcohol consumption in student populations

When the majority of students in the UK begin university they are legally allowed to purchase alcohol (18 years of age), this is in comparison to the US where students begin college at 18 years old but cannot legally purchase alcohol until 21 years of age, therefore collegiate alcohol consumption is largely illegal and this should be taken into consideration when comparing literature from the UK and the US.

Frequency of alcohol consumption and binge drinking (consuming five or more alcoholic drinks in a row), were found to be significant predictors of academic achievement in this population (.044 and .012 respectively). The negative influence of binge drinking on

academic achievement supports research by Singleton (2007) and Singleton and Wolfson (2009). Yet the positive effect of frequency of alcohol consumption on academic achievement supports that of Hatch *et al* (2007), Maggs *et al* (2008), and Englund *et al* (2008). This highlights a complex relationship between alcohol and academic achievement.

One factor which may influence alcohol consumption is environment (Wicki *et al*, 2010). Oxstalls campus is a relatively small, self-contained campus with residential halls for 175 students. The campus has its own student's union bar, which, at the time of the study was attached to the halls of residence, and while only first year students live on campus, it was also less than a one minute walk from the learning centre and teaching areas. As a social area with pool tables, big screen live sports and an inviting atmosphere open twelve hours a day, it could be quite easy for students to get side tracked between lectures, or on study breaks, and end up consuming alcohol instead of attending lectures or studying. This theory would sit well with the association between alcohol consumption and class absence reported by Carson *et al* (2007). Environmental factors also include living arrangements, as discussed above first year students residing on campus are in very close proximity to the student's union bar. The university also has two other halls of residence for 218 students off campus in Gloucester; this includes 133 rooms in a city centre location close to pubs and clubs. As is standard for majority of UK universities, second and third year students find accommodation in houses or flats in the local area. This gives students freedom of choice about where they live and who they live with, and a large number of students choose to reside in the neighbouring town of Cheltenham to be closer to the pubs and clubs popular with the student body (at the time the University of Gloucestershire had three other campuses in Cheltenham). Students could choose to move in with friends from their first year flat, course, sports team, or social club, but whichever friendship group their house mates come from it is likely that they would be of similar personalities. For example, more academically focused students may not want to live with friends who are more socially orientated if they feel that their studies would be interrupted. Alternatively students who are from the area originally, may choose to live at home with parents, while others, often mature students, may live with a partner or with children. The dynamics of a household may influence behaviour (Wicki *et al*, 2010), if it is the norm for your house mates to hold social events at home or go out drinking until the early hours on student nights then students conform (Carson *et al*, 2007), especially if they do not want to be

seen as boring. Alternatively if a student lives with their parents it may not be acceptable to return home drunk several times a week or even at all; another contrast is that if a student has a partner or family to consider it may be that their social life is very different to their peers due to family responsibilities and commitments. Living arrangements may also influence drinking habits in both frequency and volume (Brunt and Rhee, 2008). Over 40% of students reported drinking alcohol several times a week; however this would encompass both those who have a glass of wine with dinner a few times a week with their partner and those who go to the student's union and/or local clubs and drink several pints five times a week with their house mates, this could link the results of both alcohol frequency and age being positive predictors of academic achievement. In contrast, those who reported drinking up to once a week, which was around half of the sample, will include those who have a big night out with non-student friends a few weekends a month, as well as those who have one or two celebratory drinks post match on a Wednesday before going back to halls to prepare for an early Thursday lecture. Therefore it is possible that those who report drinking several times a week may not exceed the recommended alcohol consumption limits, whereas those who report drinking up to once a week may be consuming well over the number of units advised. An additional question about number of units or drinks on average per week or month may help to gain a clearer picture of alcohol consumption levels in this population, highlight the type of interventions required and which students they should be aimed at.

With such a high level of alcohol consumption reported by the student population, it would have been appropriate to assess disordered alcohol use. However, while the CAGE assessment of disordered drinking (Ewing, 1984) was also asked in the questionnaire, the data was later discounted. This was because, upon investigation of how to treat the data, it was found that CAGE should not be preceded by any other alcohol related questions, and in the questionnaire used in the study it came at the end of an eight question section on alcohol.

5.3 Smoking and Illicit drugs in student populations

In this sample less than ten percent of students smoked tobacco products regularly, and no associations were found between smoking and academic achievement. With the increased

attention on smoking highlighted in Chapter 2 (page 10), it is likely to have changed attitudes towards the habit, it is now more difficult to buy tobacco products and more inconvenient to smoke in public areas due to bans. Smoking is less of a social behaviour than it once was, in that smokers have to leave their non-smoking friends to go outside in order to comply with the current laws, as a result smoking across the general population has seen a decrease (Desousa, 2011).

A reassuring majority of students reported to have never tried illicit drugs with only a small number using them regularly. This may be due to a number of reasons, firstly many of the students in the sample participated in competitive sports and while testing for banned substances is unlikely at university level, once at the standard to represent ones region or beyond, World Anti-Doping Agency laws must be obeyed. Secondly, students on social work courses may have had experience of working with service users with drug misuse disorders, and be aware of the devastating effects illicit drug use can have on a person's life. No association was found between illicit drug use and academic achievement in the current study, however, as drug use in the UK is illegal and despite having had the reassurance that their answers would in no way affect their grades, participants may not have answered this question truthfully for fear of reprimand.

5.4 Educational satisfaction in student populations

Educational satisfaction was shown to have the most significant association with academic achievement in this sample (.003) and, in general, students were moderately to highly satisfied.

The kinds of differences in satisfaction in relation to course and factor as found by Fielding *et al* (2010) (noted on page 14) lead to other questions such as; are university lecturers failing their students through poor feedback? Are resources a factor when choosing a university, and therefore students are satisfied with their own decision? Are technology courses badly organised across the country? Or is it that organisation is more important to technology students than to human geography students? An interesting concept which may help answer these questions on an institutional level is that of Jorgensen *et al's* (2011) *"performance gap"*; they took students' scores of satisfaction with a variety of factors and

subtracted it from their score of importance, the resulting gap indicated whether the institution was meeting the students' expectations or not. This could be very useful to institutions when viewing which factors of satisfaction their efforts should be concentrated on in terms of improvement, i.e. a factor with a large "performance gap" should be addressed before one with a smaller gap so that the students' expectations are at least closer to being met in all areas, then institutions can look at meeting all expectations, and then attempt to exceed those expectations where possible. For this to be done at an institutional level seems important, in a study including 38 different institutions Wiers-Jenssen *et al* (2002) found that satisfaction differed between institutions and by course, together explaining up to 17% on the variance in satisfaction. Interestingly they also found that satisfaction with aspects of teaching quality differed. Students were more satisfied with the academic quality of teaching than the pedagogic quality of teaching, this indicates that when it comes to teaching quality it is not just what you know but how you teach it that is important to students. This may relate to a study by Capara *et al* (2006) who reported that it is not only the satisfaction of the student which impacts on academic achievement. In a study of Italian junior high school teachers they found that the self-efficacy and job satisfaction of teachers and the academic achievement of their students were inter-related. It was concluded that those teachers who had greater perceived self-efficacy was significantly associated with students final academic achievement, explaining 8.2% of the variance. As outlined in the methods chapter (page 27) five faculty specific questions, along with four general questions, were added to the satisfaction questionnaire by the researcher for this study in order to capture as many factors important to this sample as possible. El Ansari and Stock (2010) used the eighteen satisfaction questions previously published (El Ansari and Oskrochi, 2006) which were part of the questionnaire used in this study and did not find a significant association between satisfaction and academic achievement in the same data set. They analysed the relationship via logistic regression rather than the linear regression used in the current study; it would be interesting to ascertain if the significance found in the current study is due to the type of regression used or the five faculty specific questions and four general created by the researcher.

5.5 Academic achievement in student populations

The sample showed a wide range of grades (see page 35), with the average grade between the two schools being similar. Data collected in this study included modules which had practical group work components to the assessment, with evidence to suggest that learning styles influence academic achievement (Cano-Garcia and Hughes, 2000; Plant *et al,* 2005), assessment type could have a similar influence. Although Cano-Garcia and Hughes (2000) found that those who preferred to work as individuals performed better academically, they note that the thinking and learning associated with academic achievement indicate that adapting personal styles to the assessment method is a way to attain higher grades. They discuss the issue of academia focussing less on creative problem solving as a teaching and learning style and more on concrete, executive styles of thinking. This outdated attitude to education trains students to regurgitate and replicate the information and techniques given to them rather than learn to adapt their knowledge and skills to solve a range of problems and to truly know their area. Taking this into account, along with the importance of how knowledge is delivered, a question arises. That question is, if academics were to deliver course content to cater for different thinking and learning styles and use a variety of assessment methods, would students who prefer to work independently still achieve better grades than those who are happy to work practically as a team? Personality traits may offer insight into this. Chamorro-Premuzic *et al* (2005) investigated the relationships between personality traits and the preference for different types of academic assessment, they concluded that personality traits were significant predictors of preferences for oral exams and group work even when gender and self assessed intelligence was accounted for. More specifically they found negative correlations between neuroticism and a preference for continuous assessment and oral exams, and between openness and a preference for multiple choice exams. Positive correlations were found between those who showed the traits of Extraversion and Agreeableness, and a preference for group work. The same was true of those who showed Extraversion and Openness, and a preference for oral exams. Although, overall, oral exams were the least preferred assessment type across all personality traits and continuous assessment was the most preferred. While the above study did not directly investigate academic performance, an earlier study by two of the same authors (Chamorro-Premuzic and Furnham, 2003) did report that over 10% of variance in

overall exam marks was accounted for by the personality traits of Neuroticism and Conscientiousness (negative and positive relationships respectively). Further research is required in this discussion and it is beyond the scope of the present study to address sufficiently.

5.6 Other significant factors of academic achievement

5.6.1 Year of study

Year of study was the second most significant association to academic achievement in this study (.009), half of the sample were first year students with less than 1% reporting their year of study as fourth or fifth. As no postgraduate lectures were entered for data collection, these students may have either been part-time students or have been repeating/picking up modules in order to meet degree requirements. Students may quickly figure out that grades from the first year do not count towards their final degree classification and that they only need to achieve a mark of 40% or above to pass the module. This may leave some with the opinion that they can focus on other aspects of university life rather than academics; however, Sit *et al* (2011) found that when comparing actual and perceived academic performance, only 42% of students correctly assumed their grades. This implies that students may be doing what they think is enough to achieve the grades they desire but may ultimately be falling short, and if only attempting to pass the module, may end up failing or needing to retake the module at a later date. Final degree classification at the University of Gloucestershire can be based on grades from the second and third years combined or the third year alone, therefore students may work harder in later years if they are not on track for the classification they desire. Workload may differ between years also; courses may have more generalised modules in the first year for students to develop a rounded knowledge of the subject area, but more in depth modules on specific topics in later years. Some courses have placement requirements in second and third years, and to attain an Honours degree (e.g. BSc (Hons) in Sport & Exercise Science rather than BSc in Sport & Exercise Science) a dissertation must be completed. Placements tend to be on the job experience for a set period of time where students get to put theory into practice. Dissertation subjects are chosen by the student and once deemed appropriate they are allocated a supervisor with the most specialised knowledge to guide them through the process of a research project. Students may invest a lot of time in placements and

dissertations as they tend to be double modules and therefore heavily weighted in possible marks**.**

5.6.2 Age

Age was significantly associated with academic achievement in this sample (.027), mean age was 22.3 years (±6.9) with 23% of the sample being classed as mature students (over 21 years of age). Age can be closely linked to year of study, in general age will increase as year of study increases and although it is possible for a student of any of the ages reported in the sample to be in their first year of study, it would not be possible for an 18 year old student to be in their second or third year, nor a 19 year old student to be in their third year. The association between age and academic achievement may be due to differences in sacrifices made to attend university and students objectives for studying for a degree. Older students returning to education are likely to have a clear direction and purpose (Murphy and Roopchand, 2003), and may be sacrificing more financially as it can be difficult to find adequate funding if a mortgage and family need to be paid for. On the other end of the scale, younger students may not have decided on the career path that they wish to take and may be studying an area of interest with no clear goal. They are likely to also have enough spare time to get part time employment during term time as well as during holidays, this would make taking on the financial burden of university study an easier decision to make. Ofori (2000) investigated academic performance of nursing diploma students in psychology, sociology, and biology modules. He found that age significantly predicted performance in all subjects, and not only were 'non-mature' students (<20 years old) consistently outperformed by 'very mature' students (>34 years old), the 'non-mature' students were classified as 'at risk' academically and more likely to withdraw from the course. The current study is in agreement with Sheard (2009) who collected data on undergraduate students on a number of strands of a Sport and Exercise Science programme in their second year (due to the fact that as with the current sample, first year grades did not count towards final degree classification), and then tracked progress until degree completion. Sheard (2009) found that mature students (21+ years) achieved significantly higher final degree GPAs than traditional students (p=.01), although he found no significant differences in age and final year dissertation mark.

5.7 Limitations

As reported in the results section the model predicts 8.8% of the variation in academic achievement in this sample, this leaves an unexplained variance of 91.2%. Some other factors which may contribute to the unexplained variance are previous academic achievement (McKenzie and Schweitzer, 2001; Singleton, 2007), assessment method (Chamorro-Premuzic *et al,* 2005), teaching approaches/student engagement (Kuh *et al*, 2006), environment (Carson *et al,* 2007; Wicki *et al,* 2010), self efficacy and motivation (Chemers *et al*, 2001; McKenzie and Schweitzer, 2001), socio economic status (Astin, 1993), and level of parental education (Pascarella and Terenzini, 2005). The contribution of the module to the students' course of study and their interest in the subject may also have an impact on academic achievement. Students may only aim to achieve the grade required to pass a compulsory module if they have no interest in the subject. Alternatively if a student has opted to take a module which interests them they may find it easier to engage and excel. This may also link to year of study as more compulsory and core modules are required in the earlier years, with more optional modules available in later years.

The current study used quantitative research methods and applied statistical analysis to the data collected. The topics addressed in the study could easily be assessed by qualitative methods such as interviews, which would have provided more in depth data and could have addressed any anomalies such as the alcohol frequency and consumption example detailed above. However, it would have been outside of the scope of an MSc by Research project to cover everything to a sufficient standard and on the scale that the study aimed to achieve. Therefore it was appropriate to use questionnaires in this instance; this approach can then highlight areas to explore in depth in the future. However, the questionnaires themselves could also be seen as a limitation. The length of time required to complete questionnaires was around 20 minutes, and the health questionnaire had many items. Due to this students became bored, and a number of them only partially completed the questionnaires, causing them to be unsuitable for analysis. The 25-30 minutes required for a session of data collection was too much time to ask of lectures which may only have been 1-2 hours long, especially when some lectures were cancelled due to heavy snow and content had to be squeezed into later lectures. It was only by the kindness of the lecturers and the School's regard for research that the amount of data collection achieved was

possible. A shorter more focused questionnaire which could have been administered quickly would have allowed more time for data collection. Although the researcher used the best sampling methods available at the time, utilising the university's email system to reach students sooner, or using an online survey tool, may also have gained more responses and ensured a more representative sample.

As mentioned above, another limitation of the study is that the researcher did not have access to student's entry grades. Therefore previous levels of academic achievement which McKenzie and Schweitzer (2001) found to account for 39% of variance in university grades, were not accounted for. However, while most courses in the School had an entry requirement of 220-260 UCAS points (from a tariff which equates grades to points), some required professional or vocational qualifications, and some, often mature, students could have been offered places due to professional experience and a combination of the above qualifications. This would mean that even with access to entry data it would have been difficult to ascertain a standard marker of previous academic achievement for comparison. In addition, the questionnaire did not ask whether students had any learning difficulties such as ADHD or dyslexia which may have affected their academic performance, although measures should have been taken by the university, such as additional time in examinations, to ensure any students were not at a disadvantage.

5.8 Implications for practice and research

In regards to satisfaction surveys, Williams and Kane (2008) recommend that instruments are tailored to be specific to each institution. If the difference between the significance of satisfaction in relation to academic achievement in the current study, and that of El Ansari and Stock (2010) (detailed in section 5.4 page 42) were due to the additional questions rather than the different methods of analysis, then the current study would lend support to Williams and Kane (2008). This would imply that faculty specific surveys offer the potential for greater level of understanding of satisfaction and therefore, would be a more effective tool than a generic one.

The University of Gloucestershire currently uses a module evaluation questionnaire with open ended questions such as 'What are the strengths of this module?' and 'What are the weaknesses of this module?'. Reports from academic staff are that these questionnaires do

not receive a high level of response. A change of practice to a tool which is quick and easy to complete is likely to yield greater responses. If the questionnaires were module specific, with a core set of questions for module comparisons if required, or, faculty specific with a response option of 'Not applicable to this module' they would have the advantage of gathering all the information required by lecturers in a format that the student might be more willing to complete and easier for staff to analyse. An open space for any other comments would allow issues not covered in the questionnaire to be highlighted, and gathering information of the importance or expectations of the same factors, either on the same questionnaire or a separate one administered at the beginning of the module, would allow the adoption of Jorgensen *et al*'s (2011) concept of a "performance gap" and allow the university to improve the education and service they deliver year on year.

Further research is required to investigate factors, such as those detailed in section 5.7, which have the potential to greater influence academic achievement in this population. Reducing the size of the health and lifestyle questionnaire to only include questions on areas of interest would likely lead to a greater return of usable data. A longitudinal study which tracked changes over the students course of study may offer deeper explanation of the associations of age and year of study with academic achievement.

5.9 Conclusion

For many students, university is often seen as a rite of passage, they are legally an adult and with students often moving away from home, they have an increased freedom of choice over their behaviours and lifestyles (Wicki *et al* 2010). This sample had wide ranging levels of physical activity participation and a high level of alcohol consumption, indicating that interventions may be required to encourage the campus population to make use of the facilities available, and promote responsible drinking.

Institutions have a responsibility to provide the highest standard of resources, facilities, and staff available to them in order to deliver a satisfying and effective educational experience to the student. However students themselves are part of the equation, they need

to be engaged and motivated to succeed in order to take full advantage of the resources and education on offer and reach their potential.

Questionnaires are useful tools for collecting data from a large sample, however very long questionnaires such as the one used in this study have their drawbacks and may result in less usable data than shorter more focused instruments. It is more ethical and therefore more appropriate to only collect the information you wish to use rather than picking out the best bits from a sea of data.

Both educational satisfaction and academic achievement remain complex areas and the true level of contribution of so many factors is yet to be fully determined. A wide range of potential factors are open for investigation and debate. However, it is possible that the successful combination of factors is different for each individual and that researchers are unlikely to find a definitive method to predicting educational satisfaction or academic achievement. A holistic approach towards further research is likely to gain a more rounded knowledge of these areas.

References

Aertgeerts, B, and Buntinx, F. (2002). The relation between alcohol abuse or dependence and academic performance in first-year college students. *Journal of Adolescent Health*. 31 (3). 223-225

Alcohol Concern (2004) Young people's drinking. Factsheet 1: Summary. London, Alcohol Concern.

Allen, M., Bourhis, J., Burrell, N., and Mabry, E. (2002). Comparing Student Satisfaction With Distance Education to Traditional Classrooms in Higher Education: A Meta-Analysis. The *American Journal of Distance Education*. 16 (2). 83-97.

American College Health Association (ACHA). Study Well Health Assessment. Available at URL: http://www.healthedpartners.org/cha/swha.pdf

Astin, A. W. (1993a). What Matters in College. *Liberal Education.* 79 (4). 4-15.

Belch, H.A., Gebel, M., and Maas, G.M. (2001). Relationship Between Student Recreation Complex Use, Academic Performance, and Persistence of First-Time Freshmen. *Journal of Student Affairs Research and Practice.* 38 (2). 254-268.

Biddle, S. J. H., Gorely, T., and Stensel, D. J. (2004). Health-enhancing physical activity and sedentary behaviour in children and adolescents. *Journal of Sports Sciences,* 22 (8). 679-701.

BMA (2003) Adolescent Health. London, British Medical Association.

Boland, M. Fitzpatrick, P. Scallan, E. Daly, L. Herity, B. Horgan, and J. Bourke. (2006). Trends in medical student use of tobacco, alcohol and drugs in an Irish university, 1973-2002. *Drug and Alcohol Dependance* 85 (2). 123-128.

Borchert, D. M. (1967). Encyclopedia of Philosophy, Volume 3, Macmillan, Inc.

Breslau, J., Miller, E., Breslau, N., Bohnert, K., Lucia, V., and Schweitzer, J. (2009). The Impact of Early Behaviour Disturbances on Academic Achievement in High School. *Pediatrics.* 123. 1472-1476.

Brunt, A.R., and Rhee, Y.S. (2008). Obesity and Lifestyle in U.S. College Students Related to Living Arrangements. *Appetite*. 632. 3-7.

Brustad, R. (2002) A Critical Analysis of Knowledge Construction. IN HORN, T. (Ed.) *Advances in Sport Psychology.* Champaign, Human Kinetics.

Bryant, A.L., Schulenberg, J., Bachman, J.G., O'Malley, P.M., and Johnston, L.D.. (2000). Understanding the Links Among School Misbehaviour, Academic Achievement, and Cigarette Use: A National Panel Study of Adolescents. *Prevention Science*. 1 (21). 71-87.

Bryant, A.L., and Zimmerman, L.A. (2002). Examining the Effects of Academic Beliefs and Behaviours on Changes in Substance Use Among Urban Adolescents. *Journal of Educational Psychology.* 4 (3). 621-637.

Bryman, A. (2001) *Social Research Method,* Oxford, Oxford University Press.

California Health Interview Survey (CHIS). (2005). Available at URL:
      http://www.askchis.com/pdf/CHIS2005_adolescent_q.pdf

Cano-Garcia, F., and Hughes, E.H. (2000). Learning and Thinking Styles: an analysis of their interrelationship and influence on academic achievement. *Educational Psychology.* 20 (4). 413-430.

Caprara, G.V., Barbarabelli, C., Steca, P., and Malone, P.S. (2006). Teachers' self-efficacy beliefs as detriments of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology*. 44. 483-490.

Carden, R., Bryant, C. and Moss, R. (2004). Locus of control, test anxiety, academic procrastination, and achievement among college students. *Psychological Reports*. 95 (2), 581-582.

Carson, J., Barling, J., and Turner, N. (2007). Group Alcohol Climate, Alcohol Consumption, and Student Perfromance. *Group Dynamics: Theory, Research, and Practice.* 11 (1). 31-41.

Castelli, D., Hillman, C., Buck, S. and Erwin, H. (2007). Physical Fitness and Academic Achievement in Third and Fifth-Grade Students. *Journal of Sports and Exercise Psychology.* 29. 239-252.

Centra, J. A. (1977). Student ratings of instruction and their relationship to student learning. *American Educational Research Journal.* 14. 17-24.

Chamorro-Premuzic, T. and Furnham, A. (2003). Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of Research in Personality.* 37. 319-338.

Chamorro-Premuzic, T., Furnham, A., Dissou, G., and Heaven, P. (2005). Personality and preference for academic assessment: A study with Australian University students. *Leaning and Indiviual Differences.* 15. 247-256.

Chemers, M.M., Hu, L., and Garcia, B.F. (2001). Academic Self-Efficacy and First-|Year College Student Performance and Adjustment. *Journal of Educational Psychology*. 93 (1). 55-64.

Clough, P. and Nutbrown, C. (2002) *A Student's Guide to Methodology,* London, Sage.

Collins, B.N., Wileyto, E.P., Murphy, M.F.G., and Munafo, M.R. (2007) Adolescent Environmental Tobacco Smoke Exposure Predicts Academic Achievement Test Failure. *Journal of Adolescent Health*. 41. 363-370.

Cousins, C. (2002). Getting to the "truth": Issues in contemporary qualitative research. *Australian Journal of Adult Learning.* 42. 192-204.

Cox, R.G., Zhang, L., Johnson, W.D., and Bender, D.R. (2007). Academic Performance and Substance Use: Findings From A State Survey of Public High School Students. *Journal of School Health.* 77 (3). 109-114.

Crotty, M. (2003) *The Foundations of Social Research: Meaning and Perspective in the Research Process,* London, Sage.

Crum, R. M., Juon, H.-S., Green, K. M., Robertson, J., Fothergill, K., and Ensminger, M. (2006). Educational achievement and early school behavior as predictors of alcohol-use disorders: 35-year follow-up of the Woodlawn Study. *Journal of Studies on Alcohol.* 67 (1). 75-85.

Denzin, N. K. and Lincoln, Y. S. (2005) *The Sage Handbook of Qualitative Research.* Thousand Oaks, CA, Sage.

Department of Health. (2011). *Factsheet 4: Physical activity guidelines for adults (19-64 years)* Available at: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh _128145.pdf [Accessed on 28-01-12].

Department of Health. (2012). *Alcohol Advice.* [Online] Available at: http://www.dh.gov.uk/en/Publichealth/Alcoholmisuse/DH_125368 [Accessed on 28-01-12].

Desousa, C. (2011). Legislation and smoking: assessing the impact of the English smoking ban on smoking behaviours, paper presented at *International Statistical Institute: 58th World Statistical Congress,* Dublin, 21st-26th August 2011.

El Ansari, W. and Oskrochi, R. (2004). What *'really'* affects health proffesions students' satisfaction with their educational experience? Implications for parctice and research. *Nurse Education Today.* 24. 644-655.

El Ansari, W. and Oskrochi, R. (2006). What matters most? Predictors of students satisfaction in public health courses. *Public Health.* 120. 11.

El Ansari, W., and Stock, C. (2010). Is the Health and Wellbeing of University Students Associated with their Academic Performance? Cross Sectional findings from the United Kingdom. *International Journal of Environmental Research and Pubic Health.* 7. 509-527.

Ellickson, P.L., Tucker, J.S., and Klein, D.J. (2001). High-Risk Behaviours Associated With Early Smoking: Results From a 5-Year Follow-Up. 28. 465-473.

Englund, M.M., Egeland, B., Oliva, E.M. and Collins, W.A.. (2008). Childhood and adolescent predictors of heavy drinking and alcohol use disorders in early adulthood: a longitudinal development analysis. *Addiction.* 102 (suppl. 1). 23-35.

Eom, S.B., and Wen, H.J. (2006). The Detriments of Students' Perceived Learning Outcomes and Satisfaction in University Online Education: An Empirical Investigation. Decision Sciences Journal of Innovative Education. 4 (2). 215-235.

ESRC (2005) Research Ethics Framework. Economic & Social Research Council.

Ewing, J. A. (1984) Detecting Alcoholism: The CAGE Questionnaire. *Journal of the American Medical Association,* 252.

Faulkner, N. H., Neumark-Sztainer, D., Story, M., Jeffery, R. W., Beuhring, T., and Resnick, M. D. (2001). Social, educational, and psychological correlates of weight status in adolescents. *Obesity Research*. 9. 32-42.

Fielding, A., Dunleavy, P.J., and Langan, A.M. (2010). Interpreting context to the UK's National Student (Satisfaction) Survey data for science subjects. *Journal of Further and Higher Education*. 34 (3). 347-368.

Fleming, C. B., Haggerty, K. P., Brown, E. C., Catalano, R. F., Harachi, T. W., Mazza, J. J., and Gruman, D. H. (2005). Do social and behavioral characteristics targeted by preventive interventions predict standardized test scores and grades? Journal of School Health, 75. 342-349.

Fredricks, J.A. and Eccles, J.S. (2006). Is Extracurricular Participation Associated With Beneficial Outcomes? Current and Longitudinal Relations. *Developmental Psychology*. 42 (4). 698-713.

Fromme, K., Corbin, W. C., and Kruse, M. (2008). Behavioral risks during the transition from high school to college. *Developmental Psychology*. 44. 1497–1504.

Gau, S.S.F., Chong, M-Y., Yang, P., Yen, C-F., Liang, K-Y., and Cheng, A.T.A. (2007). Pshychiatric and Phychosocial Predictors of Substance Use disorders amongst Adolescents. *British Journal of Psychiatry*. 190. 42-48.

Gill, J. S. (2002) Reported Levels of Alcohol Consumption and Binge Drinking Within the UK Undergraduate Population Over the Last 25 Years. *Alcohol & Alcoholism,* 37. 11.

Gottlieb, N.H., and Green, L.W. (1984). Life Events, Social Network, Life-Style, and Health: An Analysis of the 1979 National Survey of Personal Health Practices and Consequences. *Health Education and Behaviour*.

Great Britain. *Data Protection Act 1998. Chapter 29*. London: HMSO.

Grissom, J.B. (2005) Physical Fitness And Academic Achievement. *JEPonline*. 8 (1) 11-25.

Haase, A., Steptoe, A., Sallis J.F., and Wardle, J. (2004). Leisure-time physical activity in university students from 23 countries: associations with health beliefs, risk awareness, and national economic development. *Preventive Medicine*. 39 (1). 182-190.

_____

Hall, K.M., Irwin, M.M., Bownab, K.A.. Frankenberger, W., and Jewett, D.C. (2005). Illicit Use of Prescribed Stimulant Medication Among College Students. *Journal of American College Health.* 53 (4). 167-174.

Hatch, J. A. (2002) *Doing Qualitative Research in Education Settings,* Albany,State University of New York.

Hatch S. L., Jones P. B., Kuh D., Hardy R., Wadsworth M., and Richards M. (2007). Childhood cognitive ability and adult mental health in the British 1946 birth cohort. *Social Science & Medicine.* 64. 2285–2296.

Hayabakhsh, M.R., Najman, M.R., Bar, W., Clauarino, A., and Alati, R. (2011). School Performance and Alcohol Use Problems in Early Adulthood: A Longitudinal Study. *Alcohol.* 45 (7). 701-709.

He, Z.X., and Baker, D.W. (2005). Differences in leisure time, household, and work-related physical activity by race, ethnicity and education. *Journal of General International Medicine.* 20. 259-266.

Hollis, M. (1994) *The Philosophy of Social Science: an Introduction,* Cambridge, Cambridge University Press.

Howland, J., Rohsenow, D., Greece, J.A., Littlefield, C.A., Almeida, A., Heeren, T., Winter, M., Bliss, C.A., Hunt, S., and Hermos, J. (2009). The effects of binge drinking on college students' next-day academic test-taking performance and mood stage. *Addiction.* 195. 655-665.

Huang, C., Gao, Z., and Zhang, T. (2009). School Children's Physical Activity Levels: Activity and Gender Differences. *Research Quarterly for Exercise and Sport.* 80 (1). A-60.

Hughes, K., Anderson, Z., Morleo, M., and Bellis, M. (2007). Alcohol, nightlife and violence: the relative contributions of drinking before and during nights out to negative health and criminal justice outcomes. *Addiction.* 103. 60-65.

Jeynes, W.H. (2002). The Relationship Between the Consumption of Various Drugs by Adolescents and Their Academic Achievement. *American Journal of Drug Alcohol Abuse.* 28 (1). 15-35.

Johnston, L.D., O'Malley, P.M., Bachman, J.G., and Schulenberg, J.E. (2008). Monitoring the Future. National Survey Results on Drug Use, 1975-2007. *National Institute on Drug Abuse.* 2. 1-319.

Jorgensen, S., Fichten, C., and Havel, A. (2011). College Satisfaction and Academic Success. *Office of Institutional Research.*

Keller, S., Maddock. J.E., Hannover, W., Thyrian, J.R., and Basler, H-D. (2008). Multiple Health risk Behaviours in German First Year University Students. *Preventative Medicine.* 46. 189-195.

Kerridge, J.R. and Mathews, B.P. (1998): Student Rating of Courses in HE: further challenges and opportunities. *Assessment & Evaluation in Higher Education.* 23 (1). 71-82

King, K. M., Meehan, B. T., Trim, R. S. and Chassin, L. (2006). Marker or mediator? The effects of adolescent substance use on young adult educational attainment. *Addiction*, 101. 1730–1740.

Kravitz, L. (2007). The 25 Most Significant Health Benefits of Physical Activity & Exercise. *IDEA Fitness Journal,* 4 (9). 54-63.

Kuh, G.D., Kinzie, J., Buckley, J.A., Bridges, B.K., and Hayek, J.C. (2006). What Matters to Student Success: A Review of Literature. *National Post -secondary Education Cooperative*. 1-105.

LaBrie, J. W., Hummer, J. F., and Pederson, E. R. (2007). Reasons for drinking in the college student context: The differential role and risk of the social motivator. *Journal of Studies on Alcohol and Drugs*, 68. 393–398.

Last, J. M. (1988) *A Dictionary of Epidemiology,* New York, Oxford University Press.

Lee, G., Jolly, N., Kench, P., and Gelonesi, B. (July 5-7, 2000). Factors related to student satisfaction with university. *Paper presented at The Fourth Pacific Rim - First year in Higher Education Conference: Creating futures for a new millennium*. Brisbane: Australia.

Lizzio, A., Wilson, K., and Simons, R. (2002). University Students' Perceptions of the Learning Environment and Academic Outcomes: implications for theory and practice. *Studies in Higher Education*. 27 (1). 27-52.

Lowry, R., Galuska, D.A., Fulton, J.E., Weschler, H., Kann, L., and Collins, L. (2000). Physical Activity, Food Choice, and Weight Management Goals and Practices Amongst U.S. College Students. *American Journal of Preventative Medicine*. 18 (1). 18-27.

Maggs, J.L., Patrick, M.E. and Feinstein, L. (2008). Childhood and adolescent predictors of alcohol use and problems in adolescence and adulthood in the National Child Development Study. *Addiction*. 103 (suppl. 1). 7-22.

Marsh, H.W., and J.H.S. Cheng. (2008). Dimensionality, multilevel structure, and differentiation at the level of university and discipline: Preliminary results. http://www.heacademy.ac.uk/resources/detail/ourwork/research/NSS_herb_marsh.

Martens, M.P., Dams-O'Connor, K., and Beck, N.C. (2006). A Systematic Review of College Student-Athlete Drinking: Prevalence Rates, Sport-Related Factors, and Interventions. *Journal of Substance Abuse Treatment*. 31. 305-316.

Martinelli, A. M. (1999). An explanatory model of variables influencing health promotion behaviours in smoking and non smoking college students. *Public Health Nursing*. 16. 6.

McKenzie, K., and Schweitzer, R. (2001). Who Succeeds at University? Factors predicting academic performance in first year Australian university students. *Higher Research &*

Development. 20 (1). 21-33.

McLellan, L., Rissel, C., Donnelly, N., and Bauman, A. (1999). Health behaviour and the school environment in New South Wales, Australia. *Social Science & Medicine.* 49. 611-619.

Meredith, C.N. and Dwyer, J.T. (1991). Nutrition and exercise: effects on adolescent health. *Annual Review of Public Health,* 12. 309–33.

Mikolajczyk, R.T., Brzoska, P., Maier, C., Ottova, V., Meier, S., Dudziak, U., Ilieva, S., and El Ansari, W. (2008). Factors associated with self-rated health status in university students: a cross-sectional study in three European countries. *BMC Public Health.* 8. 215.

Miller, K., Staten, R.R., Rayens, M.K., and Noland, M. (2005). Levels and characteristics of physical activity among a college student cohort. *American Journal of Health Education.* 36. 215–220.

Misuse of Drugs Act http://www.legislation.gov.uk/ukpga/1971/38/contents

Modric, T., Zenic, N., and Sekulic, D. (2011). Substance Use and Misuse Among 17-18 Year Old Croatian Adolescents: Correlation with Scholastic Variables and Sport Factors. *Informa Healthcare.* 46 (10). 1328-1334.

Murphy, H. and Roopchand, N. (2003). Inrtinsic Motivation and Self-esteem in Traditional and Mature Students at a Post-1992 University in the North-east of England. *Educational Studies.* 29 (2). 243-259.

National Health Interview Survey (NHIS). (2007). Available at URL:
    ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/2007/english/qalthealt.pdf

Ofori, R. (2000). Age and 'type of domain specific entry qualifications as predictors of student nurses' performance in biological, social and behavioural sciences in nursing assessments. *Nurse Education Today.* 20. 298-310.

O'Malley, P.M., and Johnston, L.D. (2005). Epidemiology of Alcohol and Other Drug Use Among American College Students. *Institute for Social Research.* 14. 23-39.

Oldenburg, B. F., Hardcastle, D, and Kok, G. (1997) Diffusion of health education and health promotion innovations. In Glanz, K., Lewis, B. F. and Rimer, B. (eds), *Health Behaviour and Health Education: Theory*, *Research and Practice*, 2nd edn. Jossey-Bass, San Francisco, CA, pp. 270–286.

Paeratakul, S., White, M.A., Williamson, D.A., Ryan, D.H., and Bray, G.A. (2002).Sex, race/ethnicity, socioeconomic status, and BMI in relation to self-perception of overweight. *Obesity Research.* 10. 345-350.

Pascarella, E .T., and Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research.* San Francisco: Jossey-Bass.

_____

Paschall M.J, and Freisthler B. (2003). Does heavy drinking affect academic performance in college? Findings from a prospective study of high achievers. *Journal of Studies on Alcohol*. 64. 515–519.

Pate, R. R., Heath, G. W., Dowda, M. and Trost, S. G. (1996). Associations between physical activity and other health behaviors in a representative sample of US adolescents. *American Journal of Public Health*. 86. 4.

Pfeifer, C. and Cornelißen, T. (2010). The impact of sports participation on educational attainment- New evidence from Germany. *Economics of Education Review*. 29 (1). 94-103.

Pietsch, S. and Jansen, P. (2012). Different mental rotation performance in students of music, sport and education. *Learning and Individual Differences*. 22 (1). 159-163.

Piko, B. (2000). Health-Related Predictors of Self-Perceived Health in a Student Population: The Importance of Physical Activity. *Journal of Community Health*. 25 (2). 125-137.

Pimparyon, P., Roff, S., McAleer, S., Poonchai. B., and Pemba, S. (2002). Educational Environment, Student Approaches to Learning and Academic Achievement in a Thai Nursing School. *Medical Teacher*. 22 (4). 359-364.

Plant, E.A., Ericsson, K.A., Hill, L., and Asberg, K. (2005). Why study time does not predict grade point average across college students; implications of deliberate practice for academic performance. *Contemporary Education Psychology*. 30 (1) 96-116.

Plotnikoff, R.C., Mayhew, A., Birkett, N., Loucaides, C.A., and Fodor, G. (2004). Age, Gender and urban-rural differences in the correlates of physical activity. *Preventive Medicine*. 39. 1115-1125.

Popper, K. (1963) *Conjectures and Refutations: The Growth of Scientific Knowledge*, London, Routledge and Keagan.

Rand, A. (1986) *"What Is Capitalism?" Capitalism: The Unknown Ideal.*

Roebken, H. (2007). *Multiple Goals, Satisfaction, and Achievement in University Undergraduate Education: A Student Experience in the Research University (SERU) Project Research Paper*. (Research & Occasional Paper Series: CSHE.2.07). University of California, Berkeley. Center for Studies in Higher Education.

Robbins, S.B., Lauver, K., Le, H., Davis, D., Langley, R., and Carlstrom, A. (2004). Do Psychosocial and Study Skills Factors Predict College Outcomes? A Meta-Analysis. *Psychological Bulletin*. 130 (2). 261-288.

Rosenstock.I.M. (1974) Historical origins of the Health Belief Model. In Becker.M.H. (ed.). *The Health Belief Model and Personal Health Behavior*. Charles B.Slack. Thorofare.

Saenz, T., Marcoulides, G.A., Junn, E., and Young, R. (1999). The relationship between college experience and academic performance among minority students. *The International Journal of Educational Management.* 13 (4). 199-207.

Salazar, L. F., Diclemente, R. J. and Crosby, R. A. (2006) Philosophy of Science and Theory Construction. In Crosby, R. A., Diclemente, R. J. & Salazar, L. F. (Eds.) *Research Methods in Health Promotion.* San Francisco, Jossey-Bass.

Sanchez-Johnson, L. A., Fitzgibbon, M. L., Martinovich, Z., Stolley, M. R., Dyer, A. R., and Van Horn, L. (2004). Ethnic differences in correlates of obesity between Latin-American and black women. *Obesity Research.* 12. 652–660.

Saroyan, A. and Amundsen, C. (2001). Evaluating University Teaching: time to take stock. *Assessment & Evaluation in Higher Education.* 26 (4). 341-353.

Schulenberg, J. E., and Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol* (Suppl. 14), 54–70.

Schulenberg, J.E., O'Malley, P.M., Bachman, J.G., and Johnston, L.D. (2003) How Academic Achievement, Attitudes, and Behaviours Relate to the Course of Substance Use During Adolescence: A 6-year, Multiwave National Longitudinal Study. *Journal of Research on Adolescence.* 13 (3). 361-397.

Seo, D-C, Nehl, E., Agley, J., and Ma, S-M. (2007) Relations Between Physical Activity and Behavioural and Perceptual Correlates Among Midwestern College Students. *Journal of American College Health.* 56. 187-197.

Sesso, H.D., Paffenbarger, R.S. and Lee, I-M. (2000). Physical Activity and Coronary Heart Disease in Men the Harvard Alumni Health Study. *Circulation.* 102. 975-980.

Sheard, M. (2009). Hardiness commitment, gender, and age differentiate university academic performance. *British Journal of Educational Psychology.* 79. 189-204.

Sigfusdottir, I.D., Kristjansson, A. L., and Allegrante, J.P. (2007). Health Behaviour and Academic Achievement in Icelandic School Children. *Health Education Research.* 22 (1). 70-80.

Singleton, R. A. (2007). Collegiate alcohol consumption and academic performance. *Journal of Studies on Alcohol and Drugs*. 68. 548–555.

Singleton R. A. and Wolfson A. R. (2009). Alcohol Consumption, Sleep, and Academic Performance Among College Students. *Journal of studies on alcohol and drugs*. 70 (3). 355-363.

Sit, C.H.P., Braman, O.R., Kerr, J.H., and Lindner, K.J. (2011). Motivational style and actual perveived academic performance of secondary school students in Hong Kong. *School Psychology International.*

Somekh, B. and Lewin , C. (2005) *Research Methods in the Social Sciences,* London, Sage.

Steptoe, A., Wardle, J., Cui, W., Bellisle, F., Zotti, A-M., Baranyai, R., and Sanderman, R. (2002a). Trends in Smoking, Diet, Physical Exercise, and Attitudes towards Health in European University Students from 13 countries 1990-2000. *Preventive Medicine.* 35. 97-104.

Steptoe, A., Wardle, J., Cui, W., Baban, A., Glass, K., Pelzer, K., Tsuda, A., and Vinck, J. (2002b). An international comparison of tobacco smoking, beliefs and risk awareness in university students from 23 countries. *Addiction.* 97. 1561–1571.

Stock, C., Kucuk, N., Miseviciene, I., Dr. Habil., Guillen-Grima, F., Petkeviciene, J., Aguinaga-Ontoso, I., and Kramer, A. (2003). Differences in health complaints among university students from three European countries. *Preventive Medicine.* 37. 535-543.

Stock, C., Mikolajczyk, R.T., Bilir, N., Petkeviciene, J., Naydenova, V., Dudziak, U., Marin-Fernandez, B., and El Ansari, W. (2007). Gender differences in students' health complaints: a survey in seven countries. *Journal of Public Health.*

Suhre, C.J.M., Jansen, E.P.W.A., and Harskamp, E.G. (2007). Impact of Degree Program Satisfaction on the Persistence of College Students. *Higher Education.* 54. 207-226.

Sutherland, I., and Shepherd, J.P. (2001). Social Dimensions of Adolescent Substance Use. *Addiction.* 96. 445-458.

Taras, H., and Potts-Datema, W. (2005).Sleep and Student Performance at School. *Journal of School Health.* 75 (7). 248-254.

Thomas, E.H., and Galambos, N. (2004). What Satisfies Students? Mining Student-Opinion Data with Regression and Decision Tree Analysis. *Research in Higher Education.* 45 (3). 251-269.

Thomas, J. R., Nelson, J. K. and Silverman, S. J. (2005) *Research Methods in Physical Activity,* Champaign, Ill, Human Kinetics.

Thombs, D., Olds, R.S., Bondy, S., Winchell, J., Baliunas, D., and Rehm, J. (2009). Undergraduate Drinking and Academic Performance: A Prospective Invesitgation With Objective Measures. *Journal of Studies on Alcohol and Drugs.* 776-785.

Tremblay, M., LeBlanc, A., Kho, M., Saunders, T., Larouche, R., Colley, R., Goldfield, S., and Gorber, S. (2011). Systematic review of sedentary behavior and health indicators in school age children and youths. *International Journal of Behavioral Nutrition and Physical Activity.* 8. 98-120.

Trockel, M., Barnes, M., and Egget, D. (2000). Health-Related Variables and Academic Performance Amongst First-Year College Students: Implications for Sleep and Other Behaviors. *Journal of American College Health.* 49. 125-131.

Trost, S.G., Owen, N., Bauman, A.E., Sallis, J.F., and Brown, W. (2002). Correlates of adults' participation in physical activity: Review and update. *Medicine and Science in Sports and Exercise.* 34. 1996–2001.

Trudeau, F. and Shephard, R.J. (2008). *International Journal of Behavioral Nutrition and Physical Activity.* 5 (10).

Umbach, P. and Porter, S.R. (2002). How Do Academic Departments Impact Student Satisfaction? Understanding the Contextual Effects of Departments. *Research in Higher Education.* 43 (2). 209-234.

Watchel, H. K. (1998) Student evaluation of college teaching effectiveness: A brief review. *Assessment and Evaluation in Higher Education.* 23. 20.

White, H. R., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., and Abbott, R. D. (2006). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. *Journal of Studies on Alcohol.* 67. 810–822.

WHO 5 Well-Being Index (1998). Available at URL: http://www.cure4you.dk/354/WHO-5_English.pdf

Wechsler, H. and Nelson, T.F. (2001) Binge drinking and the American college student: What's five drinks? *Psychology of Addictive Behaviors*. 15. 287–291.

Wicki,, M., Kuntsche, E., and Gmel, G. (2010). Drinking at European Univertities? A review of students' alcohol use. *Addictive Behaviours.* 35 (11). 913-914.

Wiers-Jenssen, J., Stensaker, B., and Grogaard, J.B. (2002).Student Satisfaction: towards an empirical deconstruction of the concept. *Quality in Higher Education.* 8 (2). 183-195.

Williams, J., and Kane, D. (2008). Exploring the National Student Survey. *The Higher Education Academy.* 1-80.

Wish, E.D., Fitzelle, D.B., O'Grady, K.E., Hsu, M.H., and Arria, A.M. (2006). Evidence for Significant Polydrug Use Amongst Ecstasy-using College Students. *Journal of American College Health*. 55 (2). 99-104.

Zimmerman, M.A., and Schmeelk-Cone, K.H. (2003). A longitudinal analysis of adolescent substance use and school motivation among African American youth. *Journal of Research on Adolescence.* 13(2). 185-210.

UNIVERSITY OF GLOUCESTERSHIRE

The Determinants of Students' Health Behaviours, Wellbeing and Satisfaction with their Learning Experience

Principal Researcher: Professor Walid El Ansari

Participant Information Sheet

As part of a wider investigation that we have already implemented in Germany, Poland, Bulgaria, Denmark, Spain, Lithuania and Turkey, we are now undertaking an explorative study into **The Determinants of Students' Health Behaviours, Wellbeing and Satisfaction with their Learning Experience** at the University of Gloucestershire. This is not to gather information about individual students, but rather to understand students' behaviours and wellbeing; health challenges and complaints; sources of strains and burdens; feelings and thoughts; and relationships as a population. Research on health status and morbidity in university students will guide health education policies and promoting initiatives, but requires knowledge of the range of factors impacting on students' health. The study hopes to identify the factors related to quality of and attitude to life that participants perceive as important for them towards feeling of good health and positive outlook.

Your participation is COMPLETELY VOLUNTARY and requires about 15 minutes eliciting your views via 2 questionnaires: one about <u>Health Behaviours</u> and the other about <u>Satisfaction</u> with your educational experience. All data you supply are confidential and are stored securely under lock and key and protected by standard Data Protection procedures. No persons other than the research team shall have access to the information.

YOUR NAME IS NOT REQUIRED and every possible step will be taken to ensure that all questionnaires remain anonymous/confidential. Tutors or teaching staff shall not have access to the data. The questionnaires need to be linked and your grade for individual modules retrieved, in order to do this your STUDENT NUMBER (REGISTRATION NUMBER) is required. In line with the ethical approval for this study, this shall only be for matching up the information. Your student number will be removed once all the information is linked together. Your name will not be known to anyone. Your grade on this module shall not in any way be influenced by whether you wish to participate.

PLEASE DO NOT PUT YOUR NAME ON THE QUESTIONNAIRES.

PUT YOUR STUDENT NUMBER ON THE QUESTIONNAIRES.

The study is only asking about your own perceptions to the questions, and not anybody else's perceptions. There are no 'right' or 'wrong' responses to any of the questions. It is thus of utmost importance that you only think about yourself when answering the questions that are posed.

University of Gloucestershire thanks you for your participation, and shall be happy to provide any feedback required if you would like to see the results. Please do not hesitate to e-mail me on: lraybould@glos.ac.uk or alternatively contact me on ext. 5324. In the unlikely event that you might become distressed by the contents of the questionnaire, the University Counselling Service will be available for support. Please contact the University Counselling Service on ext. 4542

Thank you for your participation!

University of Gloucestershire

QUESTIONNAIRE

STUDENTS' HEALTH

	d	d	m	m	y	y
DATE						

STUDENT NUMBER

Dear students,

We would like to ask you to fill out the following questionnaire. The questionnaire deals with students' stress and health. The aim of this study is to develop a health promotion program based on the data collected which would be offered to students at your university in the future. Your participation in this study is voluntary. By filling out this questionnaire you agree to participate in this study. Your answers are anonymous and will be used for scientific research purposes only.

Instructions for filling out this questionnaire

Please answer all questions honestly.

There are no right or wrong answers. Please mark the field which corresponds to your point of view the most/the closest.

Example:

1. How satisfied do you feel today?					
Not at all	A little	Somewhat	Quite Satisfied	Satisfied	Very satisfied
☐	☐	☐	☐	☐ ✗	☐

Written fill-ins please write in block and capital letters in the given field. Keyword-answers are fully sufficient.

Example:

Other: ...U N I V E R S I T Y ....

The researchers would like to take some anthropometric measures such as blood pressure, resting heart rate and body composition; these measures would be taken in the laboratories at Oxstalls and only the research team will see your results. Please indicate if you would be willing to participate in this part of the study by contacting the lead researcher via email on lraybould@glos.ac.uk

What is your approximate height and weight? (Please use the units you feel most comfortable with.)

Height in centimeters .... cm

Height in feet & inches .... ft .... in

Weight in kilograms .... kg

Weight in stones & pounds .... st .... lbs

First we would like to ask you about your general health condition.

1. How would you describe your general health?

Excellent	Very good	Good	Fair	Poor
☐	☐	☐	☐	☐

2. To what extent do you keep an eye on your health?

Not at all	not much	to some extent	very much
☐	☐	☐	☐

3. Have you seen a medical practitioner (excluding dentist) in the past six months?

☐ **No** ☐ **Yes; how often?** [ ] **Times What were the reasons?** ....

4. During the past twelve months, have you been so ill that you had to stay in bed?

☐ **No** ☐ **Yes; how often?** [ ] **Times What was the illness?** ....

5. Do you regularly take any medication? ☐ **No** ☐ **Yes, what kind?** ....

For what reason?..

6. To what extent do you agree with the following statements?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a. There should be no smoking on the university premises at all.	☐	☐	☐	☐	☐
b. Smoking should be allowed in marked areas.	☐	☐	☐	☐	☐
c. Alcohol should not be sold at the university.	☐	☐	☐	☐	☐

The next part is about health problems and various strains in your life.

7. How often did you have the following problems during the last 12 months?

		Never	Rarely	Sometimes	Very often
a.	Stomach trouble/Heartburn	☐	☐	☐	☐
b.	Back pain	☐	☐	☐	☐
c.	Rapid heart beat, Circulatory problems, Dizziness	☐	☐	☐	☐
d.	Headaches	☐	☐	☐	☐
e.	Sleep disorder/insomnia	☐	☐	☐	☐
f.	Difficulties to concentrate	☐	☐	☐	☐
g.	Neck and shoulder pain	☐	☐	☐	☐
h.	Depressive mood	☐	☐	☐	☐

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

8. In the last month.....

		Never				Very often
a.	How often have you felt that you were unable to control the important things in your life?	☐	☐	☐	☐	☐
b.	How often have you felt confident about your ability to handle your personal problems?	☐	☐	☐	☐	☐
c.	How often have you felt that things were going your way?	☐	☐	☐	☐	☐
d.	How often have you felt difficulties were piling up so high that you could not overcome them?	☐	☐	☐	☐	☐

9. How many people do you know – including your family and friends– who support you whenever you feel down?

None	One person	Two - three persons	More than three persons
☐	☐	☐	☐

10. Are you on the whole satisfied with support you get in such situations?

Very satisfied   **Very dissatisfied**

☐	☐	☐	☐	☐

11. If you consider the quality of your life: How did things go for you in the last four weeks?

Very badly	Badly	So So	Quite well	Very well
☐	☐	☐	☐	☐

The following questions refer to your food intake and physical activity.

12. How many servings of fruits and vegetables do you usually have per day (1 serving = 1 medium piece of fruit, 1/2 cup chopped, cooked or canned fruits/vegetables, 3/4 cup fruit/vegetable juice, small bowl of salad greens, or 1/4 cup dried fruit)?

I don't eat fruits and vegetables	1-2	3-4	5 or more
☐	☐	☐	☐

13. Do you have any specific dietary habits/needs? (e.g. Vegetarian, Vegan, Lactose free, Gluten free).

………………………………………………………………

For what reason? (e.g. religion, choice, allergy) …………………………………………………………

14. How often do you eat/drink the following items?

	More than once daily	Once Daily	Once or more per week	Once or more per month	Never
Fats and dairy foods:					
Animal fats	☐	☐	☐	☐	☐
Vegetable margarine	☐	☐	☐	☐	☐
Low-fat margarine	☐	☐	☐	☐	☐
Cheese	☐	☐	☐	☐	☐
Milk, yoghurt	☐	☐	☐	☐	☐
Meats, eggs, fish:					
Meat	☐	☐	☐	☐	☐
Sausages	☐	☐	☐	☐	☐
Eggs	☐	☐	☐	☐	☐
Fish	☐	☐	☐	☐	☐
Fruit and vegetables:					

Fruit	☐	☐	☐	☐	☐
Juice	☐	☐	☐	☐	☐
Vegetables (excluding potatoes)	☐	☐	☐	☐	☐
Breads, cereals, starches:					
White ryebread	☐	☐	☐	☐	☐
Dark ryebread	☐	☐	☐	☐	☐
Light bread	☐	☐	☐	☐	☐
Coarse bread	☐	☐	☐	☐	☐
Pasta	☐	☐	☐	☐	☐
Potatoes	☐	☐	☐	☐	☐
Rice	☐	☐	☐	☐	☐
Cooked oatmeal	☐	☐	☐	☐	☐
Baked goods, sweets:					
Cake, biscuits	☐	☐	☐	☐	☐
Candy, chocolate	☐	☐	☐	☐	☐
Jam, honey	☐	☐	☐	☐	☐
Ice cream, soda	☐	☐	☐	☐	☐

15. How important is for you to eat healthy?

Very important   **Not at all important**

☐   ☐   ☐   ☐   ☐

16. We would like to ask some questions about your current and past experiences with dieting.

	Currently	In the past	Never
a. Have you ever tried to lose weight?	☐	☐	☐
b. Have you ever tried to gain weight?	☐	☐	☐
c. Do you consciously eat less than you want in order to control your weight?	☐	☐	☐
d. Do you consciously eat more than you want in order to alter your weight?	☐	☐	☐
e. Do you try to eat/purchase foods that are low in fat?	☐	☐	☐
f. Do you often diet in an effort to control your weight?	☐	☐	☐
g. Do you commonly skip meals to lose weight?	☐	☐	☐
h. Do you count grams of fat as a conscious means of controlling your weight?	☐	☐	☐
i. Do you deliberately take small helpings as a means of controlling your weight?	☐	☐	☐
j. Do you count calories as a conscious means of controlling your weight?	☐	☐	☐
k. Do you ever vomit after you eat?	☐	☐	☐
l. Do you ever use over-the-counter diet aids (eg, Dexatrim, Slim-Fast) to lose weight?	☐	☐	☐
m. Do you ever use over-the-counter supplements (eg, Creatine, Whey protein) to gain weight?	☐	☐	☐
n. Have you ever tried herbal teas or herbs to lose weight?	☐	☐	☐
o. Have you ever been on a special weight loss diet?	☐	☐	☐
p. Have you ever been on a special weight gain diet?	☐	☐	☐

q. Have you ever followed a fad diet? ☐ ☐ ☐

r. Do you ever use cigarette smoking to control your weight? ☐ ☐ ☐

s. Do you ever use drugs such as amphetamines (eg, whites/uppers) to control your weight? ☐ ☐ ☐

17. When did you measure your weight for the last time?

Yesterday	Last week	Last month	Some months ago	More than one year ago	Do not know
☐	☐	☐	☐	☐	☐

18. In your opinion are you ...

Far too thin	A little too thin	Just right	A little overweight	Very overweight
☐	☐	☐	☐	☐

19. In your opinion are you muscular (males) / athletic (females)?

Not at all   Very much

☐   ☐   ☐   ☐   ☐

20. Do you consciously eat less than you want in order to control your weight?

Not at all   Very much

☐   ☐   ☐   ☐   ☐

21. Do you consciously eat more than you want in order to alter your weight?

Not at all   Very much

☐   ☐   ☐   ☐   ☐

22. Do you go beyond conventional means in order to control your weight?

Not at all   Very much

☐   ☐   ☐   ☐   ☐

23. Have you ever …

	Currently	In the past	Never
a. Eaten consciously to allow your muscles to grow?	☐	☐	☐
b. Used dietary supplements to support the growth of your muscles?	☐	☐	☐

24. How satisfied are you with your current weight in general?

Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied
☐	☐	☐	☐

25. How important is it for you?

Very important   Not important at all

Being thin	☐	☐	☐	☐	☐	☐	☐
Being athletic, sporty	☐	☐	☐	☐	☐	☐	☐

26. How you have been feeling about your appearance over the **past four weeks**.

		Never	Rarely	Some times	Often	Very often	Always
a.	Have you been so worried about your shape that you have been feeling you ought to diet?	☐	☐	☐	☐	☐	☐
b.	Have you noticed the shape of others and felt that your own shape compared unfavourably?	☐	☐	☐	☐	☐	☐
c.	Has being naked, such as when taking a bath, made you feel fat?	☐	☐	☐	☐	☐	☐
d.	Has being naked, such as when taking a bath, made you feel thin?	☐	☐	☐	☐	☐	☐
e.	Have you not gone out to social occasions (e.g. parties) because you have felt bad about your shape?	☐	☐	☐	☐	☐	☐
f.	Have you worried about other people seeing rolls of fat around your waist or stomach?	☐	☐	☐	☐	☐	☐
g.	When in company have your worried about taking up too much room (e.g. sitting on a sofa, or a bus seat)?	☐	☐	☐	☐	☐	☐
h.	Have you pinched areas of your body to see how much fat there is?	☐	☐	☐	☐	☐	☐
i.	Have you avoided situations where people could see your body (e.g. communal changing rooms or swimming baths)?	☐	☐	☐	☐	☐	☐

27. In the past 7 days on how many days did you: Number of days:

	0	1	2	3	4	5	6	7

Do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting? ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Get enough sleep so that you felt rested when you woke up in the morning? ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

28. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling? (This refers to activities that take hard physical effort and make you breathe harder than normal to a point where you can not hold a conversation. Think only about those physical activities that you did for at least 10 minutes at a time.)

☐ Days per week   ☐ No vigorous physical activities (skip to question 19)

29. How much time did you usually spend doing **vigorous** physical activities on one of those days?

☐ Hours   ☐ minutes per day   ☐ Do not know / not sure

30. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, cycling at a regular pace, or doubles tennis? Do not include walking. (This refers to activities that take some physical effort and make you breathe harder than normal to a point that you can hold a broken conversation. Think only about those physical activities that you did for at least 10 minutes at a time.)

☐ Days per week   ☐ No moderate physical activities (skip to question 20)

31. How much time did you usually spend doing **moderate** physical activities on one of those days?

☐ Hours   ☐ minutes per day   ☐ Do not know / not sure

32. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time? (This includes walking at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.)

| [ ] Days per week | ☐ No walking (skip to question 23) |

33. How much time did you usually spend walking on one of those days?

[ ] Hours [ ] minutes per day ☐ Do not know / not sure

---

34. During the last 7 days on a typical day, how much time did you spend sitting?

[ ] Hours [ ] minutes per day ☐ Do not know / not sure

35. Do you take part in sporting activities? No ☐ Yes, recreationally ☐ Yes, competitively ☐

36. If competitively, to what level? Local/University ☐ Regional ☐ National ☐ International ☐

The next part is about smoking, drugs and alcohol.

37. Within the last three months, how often did you smoke? (cigarettes, pipes, cigarillos, cigars)

☐ **Daily** ☐ **Occasionally** ☐ **Never**

38. If you smoke daily: How many cigarettes do you smoke on average?

39. Have you tried to quit smoking within the last 12 months? ☐ **Yes** ☐ **No**

40. Do you/Have you ever used drugs? ☐ **Yes, regularly** ☐ **Yes, but only a few times** ☐ **Never**

41. If yes, which drug(s) have you used? ……………………………..
(ecstasy, marijuana, cocaine, heroin, crack, LSD, amphetamines)

42. Within the last three months, how often did you drink alcohol, e.g. beer?

Several times a day	Every day	Several times a week	Once a week	Less than once a week	Never
☐	☐	☐	☐	☐	☐

---

43. The last time you "partied"/socialized, how many hours did you drink alcohol? ……….. hours

---

44. The last time you "partied"/socialized, how many alcoholic drinks did you have? (including alcoholic drinks you possibly had before going out) ………….. drinks

---

45. Think back once more over the LAST 30 DAYS. How many times (if any) have you had five or more drinks in a row? (A "drink" is a small glass of wine (125ml), half a pint (285ml), a bottle of beer or alcopops (330ml), a can of beer (440ml), a shot glass of spirits (25ml) or a mixed drink.)

None	1	2	3-5	6-9	10 or more
☐	☐	☐	☐	☐	☐

---

46. Please indicate on this scale from 1 to 10 how drunk you would say were the last time you were drunk or ☐ **I have never been drunk**

Somewhat merry only	1	2	3	4	5	6	7	8	9	10	Heavily intoxicated to the point of being unable to stand on my feet
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

---

47. In last 4 weeks, how many times have you been drunk?

☐ **None** ☐ **1 to 2 times** ☐ **3 or more times**

---

48. On how many occasions (if any) have you been drunk from drinking alcoholic beverages?

	0	1-2	3-5	6-9	10-19	20-39	40 or more
a. In your lifetime	☐	☐	☐	☐	☐	☐	☐
b. During the last 12 months	☐	☐	☐	☐	☐	☐	☐
c. During the last 30 days	☐	☐	☐	☐	☐	☐	☐

49.

	Yes	No
a. Have you ever felt you should cut down on your drinking?	☐	☐
b. Have people ever annoyed you by criticizing your drinking?	☐	☐
c. Have you ever felt bad or guilty about your drinking?	☐	☐
d. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover?	☐	☐

Now we would like to ask you a few questions about your studies.

50. What year are you in of your current undergraduate course? ……...

51. What degree or discipline do you study at university? …………………………………..

52. How important is it for you to have good grades at university?

Very important	Somewhat important	Not very important	Not at all important
☐	☐	☐	☐

53. How do you rate your performance in comparison with your fellow students?

Much better	Better	The same	Worse	Much worse
☐	☐	☐	☐	☐

Finally some personal details.

54. How old are you? ……….. years

55. What is your gender? ☐ female ☐ male

56. What is your nationality? ………………………………………

57. What is your ethnic origin? ……………………………………..

58. What is your religion? …………………………………………………………………………..

59. How strongly do you agree with the following statement: "My religion is very important in my life"?

Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
☐	☐	☐	☐	☐

60. How often do you attend religious services?

At least once a week	At least once a month	At least once a year	Less than once a year	Never
☐	☐	☐	☐	☐

61. What is your monthly income at your disposal after paying rent and utilities?

☐☐☐☐ (in £, please sum up your income from all sources)

62. Would you say the amount of money you have is …

Always sufficient	Mostly sufficient	Mostly insufficient	Always insufficient
☐	☐	☐	☐

63. How do you finance your studies? (please check all that apply)

☐ parents' support ☐ job during semester ☐ scholarship

☐ student loan ☐ job during breaks ☐ other, please specify:

…………………………..

64. What is the highest degree that your parents have?

	Mother	Father
No formal education	☐	☐
GCSE	☐	☐
A Level or vocational	☐	☐
Bachelor's degree	☐	☐
Master's degree	☐	☐
Ph.D. or equivalent	☐	☐

65. What is your marital status? □ single   □ married/civil partnership   □ in a relationship   □ other, please specify: ....

If you are not single, how long have you been with your partner?   ......   years   ......   months

66. Do you have children?   □ Yes   □ No   If yes, how many? ………………

67. Where do you live during university / college term time?

□ I live alone   □ I live together with my partner

□I live with my parents   □I live with house mates

□ I live in halls   □ Other: ....

Thank you for participating in this survey!

UNIVERSITY OF GLOUCESTERSHIRE
at CHELTENHAM and GLOUCESTER

Student Satisfaction & Stress Questionnaire. This questionnaire evaluates the quality of individual modules. You may be asked to complete more than one of these during your study. Using the numbers as a scale (ignore values) between the pairs of statements listed below, please circle the response that represents your view. Please complete all questions. Please be honest, all responses are strictly confidential. **Thank You**

1. This module ran smoothly — 1 2 3 4 5 — This module did not run smoothly

2. The teaching of this module has increased my interest in the subject — 1 2 3 4 5 — The teaching of this module has not increased my interest in the subject

3. The module team provided sufficient opportunity for me to ask questions and give opinions — 1 2 3 4 5 — The module team did not provide sufficient opportunity for me to ask questions and give opinions

4. The material was well presented — 1 2 3 4 5 — The material was not well presented

5. The module was thought provoking — 1 2 3 4 5 — The module was not thought provoking

6. The module's assessment method was appropriate — 1 2 3 4 5 — The module's assessment method was inappropriate

7. The module team displayed good knowledge of the subject — 1 2 3 4 5 — The module team did not display knowledge of the subject

8. The module team incorrectly assumed the level of skills and knowledge I already had — 5 4 3 2 1 — The module team correctly assumed the level of skills and knowledge I already had

9. Information (assessment schedule & reading lists) was not made available at the beginning of module — 5 4 3 2 1 — Information (assessment schedule & reading lists) was made available at the beginning of module

10. I did not receive helpful feedback while preparing assignment/assessment — 5 4 3 2 1 — I received helpful feedback while preparing my assignment/assessment

11. The seminar groups were too big for everyone to contribute — 5 4 3 2 1 — The seminar groups were small enough for everyone to contribute

12. The references I needed for this module were not available in the library — 5 4 3 2 1 — The references I needed for this module were available in the library

13. The amount of work demanded for this module was greater than I could give to a single/double module — 5 4 3 2 1 — The amount of work demanded for this module was appropriate and manageable

14. The module is made of distinctive elements and these do not integrate into a meaningful whole for me — 5 4 3 2 1 — The module is made of distinctive elements and these integrate into a meaningful whole for me

15. The module was intellectually stimulating — 1 2 3 4 5 — The module was not intellectually stimulating

16. I do not expect anything I have learnt on this module to be of direct use to me in my career — 5 4 3 2 1 — I expect some things I have learnt on this module to be of direct use to me in my career

17. Things I learnt on this module will cause me to look at my profession in a different way for the rest of my life — 1 2 3 4 5 — None of the things I learnt on this module will cause me to look at my profession in a different way for the rest of my life

18. The teaching staff's styles on this module were clear/informative & stimulated me to think independently — 1 2 3 4 5 — The teaching staff's styles of the on this module were not clear/informative & did not stimulate me to think independently

19. The practical element/sessions of this module helped my understanding of the subject — 1 2 3 4 5 — The practical element/sessions of this module did not help my understanding of the project

20. I had a previous interest in the module — 1 2 3 4 5 — I had no previous interest in the module

subject   subject

21.Generally, I find the module subject difficult   5 4 3 2 1   Generally, I find the module subject easy to
to understand   understand

22.Generally, this module did not meet my   5 4 3 2 1   Generally, this module exceeded my
expectations   expectations

23.This module would have benefited from   5 4 3 2 1   This module would have not benefited from
additional seminar/practical sessions   additional seminar/practical sessions

24.The equipment /facilities (labs, studios etc)   1 2 3 4 5   The equipment /facilities (labs, studios etc)
available for use in this module are of a   available for use in this module are of a low
high standard   standard

25.The time of day for this lecture is   5 4 3 2 1   The time of day for this lecture is
unsatisfactory   satisfactory

26.The standard of lecturers on this module is   5 4 3 2 1   The standard of lecturers on this module is
not of consistent standard   of consistent standard

*   *   *   *   *

| s | | | | | | | **27**. Student Number:
28. This Module's Code | | | | | |

29. For your course, this module is   ☐ compulsory,   ☐ core   or   ☐ optional?

30. Are you: Full-time ☐   or Part-time ☐   **31**. Gender: Male ☐   Female ☐   **32**. Age:____ years

33. Ethnic origin: Do you consider yourself: White ☐   Black Caribbean ☐   Black African ☐

Black Other ☐   Indian ☐   Pakistani ☐   Bangladeshi ☐   Chinese ☐   Other ☐

34. Do you consider yourself, or are you registered, disabled: Yes ☐   No ☐

*   *   *   *   *

1. In the last month, how often have you felt that you were unable to control the important things in your life?
(*please circle*)
    0 = never   1 = almost never   2 = sometimes   3 = fairly often   4 = very often

2. In the last month, how often have you felt confident about your ability to handle your personal problems?
    0 = never   1 = almost never   2 = sometimes   3 = fairly often   4 = very often

3. In the last month, how often have you felt that things were going your way?
    0 = never   1 = almost never   2 = sometimes   3 = fairly often   4 = very often

4. In the last month, how often have you felt difficulties were piling up so high that you could not overcome
them?
    0 = never   1 = almost never   2 = sometimes   3 = fairly often   4 = very often

*   *   *   *   *

35. Any other comments:

_____

_____

_____

Thank you for participating.

Regression

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	WalkEx, Newsatisfaction, Drug use, VigEx, Average time sitting, Alcohol frequency, Year of study, Age, ModEx, Gender, Smoking frequency, How drunk last time, 5+ drinks in a row last month	.	Enter

a. All requested variables entered.

b. Dependent Variable: Module Mark

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5548.937	13	426.841	3.460	.000^a
	Residual	39109.018	317	123.372		
	Total	44657.955	330			

a. Predictors: (Constant), WalkEx, Newsatisfaction, Drug use, VigEx, Average time sitting, Alcohol frequency, Year of study, Age, ModEx, Gender, Smoking frequency, How drunk last time, 5+ drinks in a row last month

b. Dependent Variable: Module Mark

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	

| 1 | .352[a] | .124 | .088 | 11.107 | .124 | 3.460 | 13 | 317 | .000 | 1.963 |

a. Predictors: (Constant), WalkEx, Newsatisfaction, Drug use, VigEx, Average time sitting, Alcohol frequency, Year of study, Age, ModEx, Gender, Smoking frequency, How drunk last time, 5+ drinks in a row last month

b. Dependent Variable: Module Mark

Correlations

		Module Mark	Average time sitting	Smoking frequency	Drug use	Alcohol frequency	5+ drinks in a row last month	How drunk last time	Year of study	Age	Gender	Newsatisfaction	VigEx	ModEx	WalkEx
Pearson Correlation	Module Mark	1.000	-.093	-.069	-.076	.021	-.147	-.052	.087	.183	-.077	-.165	-.077	.063	.026
	Average time sitting	-.093	1.000	.138	.113	.086	.049	.086	.128	.064	.043	-.039	.011	.082	.049
	Smoking frequency	-.069	.138	1.000	.389	.155	.187	.149	.064	.095	-.052	-.013	-.117	-.076	.050
	Drug use	-.076	.113	.389	1.000	.121	.098	.227	.045	.070	.187	.041	.065	-.060	-.027
	Alcohol frequency	.021	.086	.155	.121	1.000	.571	.357	.051	-.023	.135	.104	-.040	.035	.068
	5+ drinks in a row last month	-.147	.049	.187	.098	.571	1.000	.484	.070	-.250	.251	.125	.079	.031	.072
	How drunk last time	-.052	.086	.149	.227	.357	.484	1.000	.101	-.280	.322	.074	.110	-.026	.121
	Year of study	.087	.128	.064	.045	.051	.070	.101	1.000	-.016	.166	.134	.048	.008	-.055
	Age	.183	.064	.095	.070	-.023	-.250	-.280	-.016	1.000	-.200	-.178	-.046	.111	.025
	Gender	-.077	.043	-.052	.187	.135	.251	.322	.166	-.200	1.000	.089	.229	.080	.021
	Newsatisfaction	-.165	-.039	-.013	.041	.104	.125	.074	.134	-.178	.089	1.000	-.074	-.016	-.017
	VigEx	-.077	.011	-.117	.065	-.040	.079	.110	.048	-.046	.229	-.074	1.000	.272	.035
	ModEx	.063	.082	-.076	-.060	.035	.031	-.026	.008	.111	.080	-.016	.272	1.000	.090
	WalkEx	.026	.049	.050	-.027	.068	.072	.121	-.055	.025	.021	-.017	.035	.090	1.000
Sig. (1-	Module Mark	.	.043	.104	.083	.351	.003	.171	.056	.000	.079	.001	.078	.124	.315

Correlations

		Module Mark	Average time sitting	Smoking frequency	Drug use	Alcohol frequency	5+ drinks in a row last month	How drunk last time	Year of study	Age	Gender	Newsatisfaction	VigEx	ModEx	WalkEx
tailed)	Average time sitting	.043	.	.006	.019	.059	.186	.058	.009	.119	.212	.235	.422	.067	.186
	Smoking frequency	.104	.006	.	.000	.002	.000	.003	.122	.040	.171	.407	.015	.083	.181
	Drug use	.083	.019	.000	.	.014	.037	.000	.207	.100	.000	.225	.115	.135	.309
	Alcohol frequency	.351	.059	.002	.014	.	.000	.000	.177	.337	.007	.029	.232	.265	.109
	5+ drinks in a row last month	.003	.186	.000	.037	.000	.	.000	.101	.000	.000	.011	.073	.283	.096
	How drunk last time	.171	.058	.003	.000	.000	.000	.	.032	.000	.000	.088	.022	.319	.014
	Year of study	.056	.009	.122	.207	.177	.101	.032	.	.388	.001	.007	.190	.444	.160
	Age	.000	.119	.040	.100	.337	.000	.000	.388	.	.000	.001	.200	.021	.327
	Gender	.079	.212	.171	.000	.007	.000	.000	.001	.000	.	.050	.000	.072	.350
	Newsatisfaction	.001	.235	.407	.225	.029	.011	.088	.007	.001	.050	.	.088	.382	.381
	VigEx	.078	.422	.015	.115	.232	.073	.022	.190	.200	.000	.088	.	.000	.263
	ModEx	.124	.067	.083	.135	.265	.283	.319	.444	.021	.072	.382	.000	.	.050
	WalkEx	.315	.186	.181	.309	.109	.096	.014	.160	.327	.350	.381	.263	.050	.
N	Module Mark	339	339	338	337	335	336	338	337	339	339	339	339	337	335
	Average time sitting	339	339	338	337	335	336	338	337	339	339	339	339	337	335
	Smoking frequency	338	338	338	336	334	335	337	336	338	338	338	338	336	334
	Drug use	337	337	336	337	333	334	336	335	337	337	337	337	335	333
	Alcohol frequency	335	335	334	333	335	332	334	333	335	335	335	335	333	331
	5+ drinks in a row last month	336	336	335	334	332	336	336	334	336	336	336	336	335	333
	How drunk last time	338	338	337	336	334	336	338	336	338	338	338	338	336	334
	Year of study	337	337	336	335	333	334	336	337	337	337	337	337	335	333

Correlations

	Module Mark	Average time sitting	Smoking frequency	Drug use	Alcohol frequency	5+ drinks in a row last month	How drunk last time	Year of study	Age	Gender	Newsatisfaction	VigEx	ModEx	WalkEx
Age	339	339	338	337	335	336	338	337	339	339	339	339	337	335
Gender	339	339	338	337	335	336	338	337	339	339	339	339	337	335
Newsatisfaction	339	339	338	337	335	336	338	337	339	339	339	339	337	335
VigEx	339	339	338	337	335	336	338	337	339	339	339	339	337	335
ModEx	337	337	336	335	333	335	336	335	337	337	337	337	337	334
WalkEx	335	335	334	333	331	333	334	333	335	335	335	335	334	335

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	54.371	4.527		12.009	.000		
	Average time sitting	-.006	.002	-.127	-2.347	.020	.943	1.061
	Smoking frequency	-1.189	1.116	-.064	-1.065	.288	.760	1.317
	Drug use	-.992	1.413	-.042	-.702	.483	.758	1.320
	Alcohol frequency	1.632	.808	.134	2.020	.044	.631	1.585
	5+ drinks in a row last month	-.680	.269	-.182	-2.530	.012	.534	1.871
	How drunk last time	.304	.278	.072	1.095	.274	.648	1.544
	Year of study	1.954	.747	.143	2.614	.009	.929	1.076
	Age	.221	.099	.131	2.226	.027	.798	1.252
	Gender	-.685	1.379	-.029	-.497	.620	.785	1.274

Newsatisfaction	-3.417	1.136	-.165	-3.009	.003	.924	1.082
VigEx	-.003	.002	-.097	-1.690	.092	.841	1.188
ModEx	.002	.002	.077	1.368	.172	.882	1.134
WalkEx	.000	.001	.029	.540	.589	.961	1.041

a. Dependent Variable: Module Mark

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	37.96	69.73	55.02	4.100	323
Std. Predicted Value	-4.171	3.576	-.011	1.000	323
Standard Error of Predicted Value	1.149	8.361	2.135	.821	323
Adjusted Predicted Value	43.28	75.91	55.07	4.130	323
Residual	-38.385	34.487	-.025	10.978	323
Std. Residual	-3.456	3.105	-.002	.988	323
Stud. Residual	-3.500	3.134	-.004	1.010	323
Deleted Residual	-40.810	35.135	-.079	11.488	323
Stud. Deleted Residual	-3.564	3.179	-.005	1.014	323
Mahal. Distance	2.537	186.010	12.996	17.055	323
Cook's Distance	.000	.162	.004	.011	323
Centered Leverage Value	.008	.564	.039	.052	323

a. Dependent Variable: Module Mark

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Average time sitting	Smoking frequency	Drug use	Alcohol frequency	5+ drinks in a row last month	How drunk last time	Year of study	Age	Gender	Newsatisfaction	VigEx	ModEx	WalkEx
									Variance Proportions								
1	1	8.512	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	1.174	2.693	.00	.00	.17	.11	.00	.00	.00	.00	.00	.00	.00	.09	.17	.02
	3	.855	3.156	.00	.00	.02	.01	.00	.00	.00	.00	.00	.00	.00	.03	.00	.86
	4	.835	3.194	.00	.01	.09	.19	.00	.00	.00	.00	.00	.00	.00	.15	.24	.00
	5	.664	3.580	.00	.46	.01	.06	.00	.01	.00	.00	.00	.00	.00	.20	.16	.05
	6	.573	3.854	.00	.42	.12	.03	.00	.02	.00	.00	.00	.00	.00	.16	.32	.03
	7	.469	4.262	.00	.05	.22	.35	.00	.13	.00	.00	.01	.00	.00	.19	.04	.02
	8	.406	4.580	.00	.03	.30	.17	.01	.22	.01	.02	.01	.00	.00	.10	.03	.00
	9	.159	7.327	.00	.01	.00	.00	.05	.01	.00	.80	.07	.00	.00	.01	.01	.01
	10	.126	8.230	.00	.00	.02	.04	.04	.17	.56	.08	.06	.05	.00	.02	.01	.01
	11	.085	9.986	.00	.01	.01	.00	.40	.19	.19	.07	.00	.27	.05	.02	.00	.00
	12	.069	11.132	.00	.00	.03	.00	.48	.23	.17	.00	.31	.17	.02	.00	.00	.00
	13	.061	11.845	.00	.00	.00	.01	.01	.00	.00	.01	.10	.38	.49	.02	.00	.00
	14	.014	24.662	.99	.00	.00	.03	.01	.00	.06	.00	.44	.12	.44	.00	.01	.00

a. Dependent Variable: Module Mark

Descriptive Statistics

	Mean	Std. Deviation	N
Module Mark	55.06	11.633	339

Average time sitting	182.76	259.136	339
Smoking frequency	.30	.629	338
Drug use	.25	.497	337
Alcohol frequency	2.23	.953	335
5+ drinks in a row last month	3.37	3.109	336
How drunk last time	5.78	2.734	338
Year of study	1.74	.849	337
Age	22.29	6.886	339
Gender	1.52	.500	339
Newsatisfaction	2.3271	.56011	339
VigEx	242.1829	433.90560	339
ModEx	182.5074	423.16676	337
WalkEx	364.4030	926.60029	335