

Term-time Employment and Tertiary Students' Academic
Success

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Abstract

There is growing concern surrounding the detrimental effect of term-time employment on university students' academic success. The narrow focus of previous studies has resulted in the literature being characterised by mixed results. This study sought to clarify the effects by comprehensively investigating and controlling for a large number of variables across a diverse range of university students ($N = 1841$). Students completed an online survey during the first semester of study (2010) and their responses were later matched to their academic records for that semester. The results show that the majority of working students reported working out of financial necessity. There was no difference in grades between employed and non-employed students; however, hours worked had a direct negative linear effect on the grades of employed students. Analysis indicated that employed students would have had significantly higher grades than the non-employed subsample, if they had not worked during term. The variable 'reported negative effects of work on study' partially mediated the effect of hours worked on grades. Studying engineering moderated the effect; when engineering students worked, the negative effect on grades was greater than for those studying other subjects. In addition, hours spent in employment partially mediated the effects of age, debt and financial pressure on GPA. Students also reported that work affected other areas of their life (time spent socialising/relaxing, in leisure/sport, sleeping and with family). Just over a fifth of the working students reported feeling that the university did not make it possible to combine work and study. These findings have implications for students, student supporters and academic institutions. Students should be aware of the negative effects of work on academic performance and seek to minimise the amount they work. Supporters may be able to relieve financial pressure on students, encourage realistic perceptions about students' financial needs, and encourage students to limit the number of hours they work. Finally, academic institutions can also assist students in balancing work and study by providing a flexible learning environment.

Introduction

In many countries, working while studying has become the norm (Broadbridge & Swanson, 2006; James, Bexley, Devlin & Marginson, 2007; Long & Hayden, 2001; Manthei & Gilmore, 2005; Moreau & Leathwood, 2006; Robotham, 2009; Smith & Taylor, 1999). Changing student employment patterns have followed changes in government policy, which have increased private-sector (students and their supporters) responsibility for funding tertiary education (Broadbridge & Swanson, 2006; LaRocque, 2003; Manthei & Gilmore, 2005; Moreau & Leathwood, 2006; Robotham, 2009; Smith & Taylor, 1999). These changes have led students to experience financial hardship, debt and stress (Broadbridge & Swanson, 2006; Deacon, 1994; Humphrey et al., 1998; James et al., 2007; McCarthy & Humphrey, 1995; Moreau & Leathwood, 2006). For New Zealand tertiary students, the 1990s marked a number of significant changes to tertiary education funding, including decreased government funding per student, and the introduction of student-paid university fees and student loans (Manthei & Gilmore, 2005). In 2006, Crewdson reported that when gross domestic product, fee level, living costs and financial support structures were taken into account, New Zealand was one of the least affordable countries in which to gain a tertiary education. Currently, all students have access to either a government loan for living costs (must be repaid), a non-repayable living allowance, or both. However, this level of financial support still leaves many students reporting financial necessity as important or very important in their decision to work (Haultain, 2009).

It is commonly reported that working students are employed an average of 14 or 15 hours per week during term-time (James et al., 2007; Manthei & Gilmore, 2005; Moreau & Leathwood, 2006). This is despite recommendations that students should work no more than 10–12 hours per week (e.g. Independent Committee of Inquiry into Student Finance, 1999; The Education and Employment Committee, 2001; Watts, 2002). Some students have summarised their lack of adherence to 10-hour guidelines, in saying, “people do what they have to do” (p. 70, Watts, 2002). Haultain (2009) found that the majority (75%) of students surveyed reported

working during term-time to cover basic living necessities, and Manthei and Gilmore (2005) reported that 57% of their sample would not work if they had enough money to cover expenses. Of McInnis and Hartley's (2002) respondents, 33% said meeting basic needs was the most important influence in their decision to work. Moreover, Hunt et al. (2004) concluded from their results that the benefits of term-time employment were not sufficient to attract those from wealthier backgrounds to it; those in the position to choose to work were likely to choose not to. Combined, these studies suggest that a significant number of students, at least in the western settings of New Zealand, Australia and the UK, are employed out of financial necessity rather than choosing work for other benefits.

There is worldwide interest and concern regarding how term-time employment affects academic performance, personal wellbeing and long-term opportunities (Applegate & Daley, 2005; Hunt, Lincoln & Walker, 2004; James et al., 2007; Manthei & Gilmore, 2005; McInnes & Hartley, 2002; O'i I & Morrison, 2005; Robotham, 2009; Watts, 2002); New Zealand is no exception. Two studies conducted at the University of Canterbury indicate that between 61% and 81% of students are employed during term-time, and both studies called for further investigation into the effects of such employment (Haultain, 2009; Manthei & Gilmore, 2005).

Research conducted both on university and high school-level samples suggests that part-time employment can positively affect students, providing personal character growth, building skills and confidence, reducing financial pressure, stimulating work–study intellectual interaction, providing additional social interaction and support, and increasing future employability (Broadbridge & Swanson, 2005; Curtis, 2007; Curtis & Lucas, 2001; Curtis & Shani, 2002; Ford et al., 1995; Manthei & Gilmore, 2005; Marsh, 1991; Watts, 2002; Watts & Pickering 2000). On the other hand, there is growing concern over potential negative effects on academic life and outcomes, post-study employability (through decreasing academic performance), psychological wellbeing, social life, personal growth, time pressure, stress and tiredness (Barling, Rodgers & Kelloway, 1995; Broadbridge & Swanson, 2005; Broadbridge &

Swanson, 2006; Carney, McNeish & McColl, 2005; Curtis & Shani, 2002; Deros & Ryan, 2008; Ford et al., 1995; Hunt et al., 2004; Manthei & Gilmore, 2005; McInnes & Hartley, 2002; Moreau & Leathwood, 2006; Paton-Saltzberg & Lindsay, 1993; Smith & Taylor, 1999; Warren, 2002; Watts, 2002).

As the above research suggests, the effect of part-time employment on study is complex. Ideally, students would make an informed individual decision about whether the benefits of working outweigh the risks. Without clearer research conclusions, however, students will not know how part-time employment is likely to influence their study until after they experience the positive or negative consequences—when it is too late. Further, students may be unable to make a weighted, informed choice because, in reality, financial necessity may remove their choice (Ford et al., 1995; James et al., 2007; Lucas & Lammont, 1998; Smith & Taylor). The implications of students working out of financial necessity and encountering the negative effects of doing so are far-reaching. A substantial amount of money is invested by students, their supporters and the government to allow knowledge and skills to be acquired at tertiary institutions. Such money is invested in the belief that an education will help not only the individual, but also the country, by building human and social capital (Codd, 2002; The Independent Review of Higher Education Funding and Student Finance, 2010). If financial pressure forces students to take on employment and consequently sacrifice the full benefits of university study, then the question must be raised; are we financially supporting our students enough? Assuming that university education aids the individual, collective economy and society to function at a higher level, then the pressure on students to work may be short-changing not only the student, but also the country as a whole. As such, a review of the financial assistance given to students may be needed.

Critical in knowing whether student employment is having a long-term detrimental effect is to understand the effect of hours worked on the objective measure of student grades. Although grades are only one measure of performance, they are arguably the most important. Grades

reflect the learning that has occurred; they have the potential to determine graduate job opportunities and influence students' feelings about themselves, their course quality and the quality of teaching they receive (McInnes & Hartley, 2002). Research into the effect of employment on grades has yielded mixed results. Volkwein and Strauss (2002) reported a positive effect, as did Ma (1984), with the provision that students' course satisfaction was high. Sometimes no effect has been reported (e.g. Derous & Ryan, 2008; McInnis & Harley, 2002; Nonis & Hudson, 2006); other times a negative effect (e.g. Haultain, 2009; Hunt et al., 2004; Paton-Saltzberg & Lindsay, 1993), and yet other times a negative effect only when students work over a certain number of hours (Applegate and Daley, 2005 (22 hours); McVicar & McKee, 2001 (15 hours)). Of particular concern are the recent results from Haultain (2009). The 61% of students who worked during term-time had an average grade-point average (GPA)¹ of 3, (equivalent to C+). This was a whole letter grade lower than those who did not work (6, or B+ average). Haultain's (2009) study was preliminary, with only 101 participants. Furthermore, because the sample was simply dichotomised into workers and non-workers, it is unclear how, or if, the amount of hours worked affects grades.

Proposed Model

The mixed results of previous research suggest a complex relationship between hours worked and academic performance, likely influenced by other variables. Hence the present study sought to more comprehensively investigate the relationship between hours worked and GPA. In order to achieve this, a range of variables were examined over a large and diverse sample of university students. Variables were selected on the basis of significant findings in previous

¹ GPA is calculated using the formula $GPA = (course\ grade\ value \times course\ weight) + (course\ grade\ value \times course\ weight) + \dots / (sum\ of\ course\ weights)$. The course weight is determined by year level and whether it is a full-year or half-year paper. The numerical value assigned to each grade at the University of Canterbury is as follows:

A+	A	A-	B+	B	B-	C+	C	C-	D	E
9	8	7	6	5	4	3	2	1	0	-1

research and from suggestions raised by students in piloting the survey. Figure 1 represents the relationships that will be tested, showing how these variables are expected to interact together to affect the prime variable of interest: student grades. It is hoped that this investigation will clarify which of these variables are important, ultimately giving more information to students and their supporters, so that well-informed decisions can be made about student involvement in paid employment.

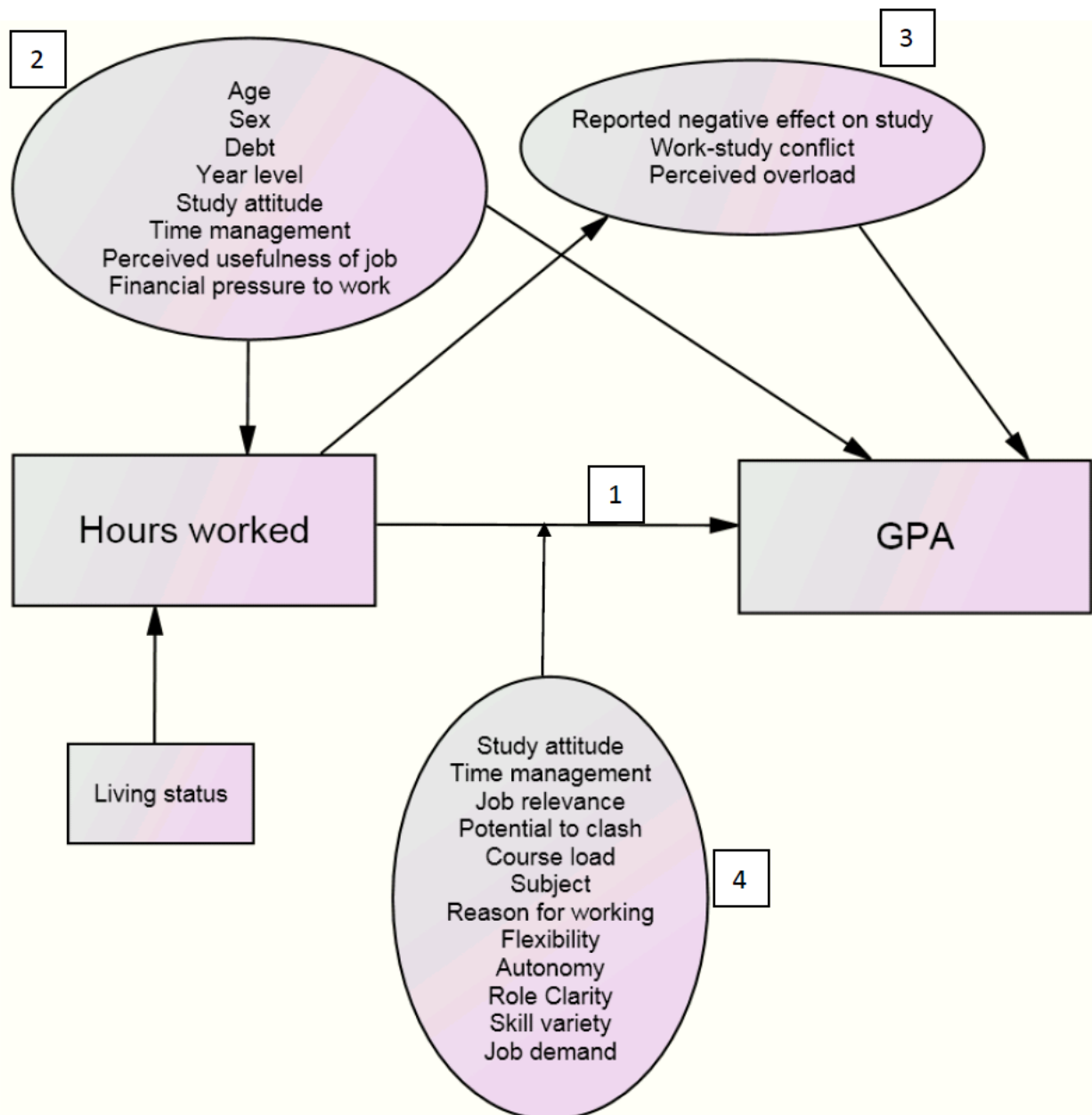


Figure 1: Hypothesised effects of variables on hours worked and GPA

Variables of Interest

The potential importance, as indicated by previous research, of the variables included in

the figure will now be discussed, according to the labels 1 to 4 in Figure 1. Appendix A provides definitions of all measured variables.

1: Hours worked & GPA

As outlined earlier, mixed findings have been reported regarding the effect of hours worked on student grades (Barling et al., 1995; Deros & Ryan, 2008; Haultain, 2009; Hunt et al., 2004; Ma, 1984; Marsh, 1991; Nonis & Hudson, 2006; Paton-Saltzberg & Lindsay, 1993; Smith & Taylor, 1997; Volkwein & Strauss, 2002). Within research demonstrating a negative effect, both a linear relationship (more hours worked only worsened grades) and curvilinear relationship (an initial positive effect, followed by a negative effect beyond a set number of hours) have been reported (Applegate & Daley, 2005; Deros & Ryan, 2008; Steinberg & Dornbusch, 1991; Warren, 2002). Based on Haultain's (2009) recent finding of a large difference between the grades of employed and non-employed students at the University of Canterbury, it was expected that a negative relationship between hours worked and grades would be found. It was uncertain whether the relationship would be linear (a consistent negative affect) or curvilinear (an initial positive effect, which becomes negative when x number of hours of employment is exceeded). Therefore, the form of the relationship is investigated.

2a: Demographic variables

Age, sex, level of debt, living circumstance, year level and subject were measured, as they were expected to affect the extent of participation in term-time employment (Hunt et al., 2004; Marsh, 1991). While there have been mixed findings in terms of both presence and direction of effect, several of these variables (debt, sex, age) were expected to be related to academic performance (McKenzie & Schweitzer, 2010; Robbins et al., 2006). Year level was also expected to be related to students' academic performance; as year level increases, students with less academic ability are less likely to progress upwards (due to failure or deciding not to continue), resulting in greater average GPA for higher year levels. The model (Figure 1) therefore proposes that hours worked partially mediates the relationship between these variables

(debt, sex, age and year level) and GPA (e.g. students with higher debt are expected to participate in more paid work to cover that debt and this may result in them having a lower GPA). These mediation relationships', and the direct effects of these variables on GPA were examined.

2b: Study attitude

A student's study attitude may affect both their GPA and the hours they spend in employment. Marsh (1991) and Warren (2002), both using high-school samples, argue that those who are not oriented towards academia have a poorer study attitude, making them more likely to have lower grades and partake in part-time employment. Thus lower grades and participation in employment could both be a result of lower academic orientation: correlated but not causing each other. In support of this theory, Marsh (1991) found that the negative relationship between work and grades was reversed when students were working to save for college (presumably an indication of a better study attitude). Study attitude was investigated in this research, as the same findings may generalise to university students. Study attitude was investigated for its direct effect on hours worked and GPA, and as a moderator of the hours worked-GPA relationship. Moderation was expected, as the same amount of hours worked may have a different effect on GPA depending on a student's study attitude (e.g. someone with an excellent study attitude may be more careful not to let their work affect their study).

2c: Time management

Students may also vary in their time-management skills, with greater skills assisting students to effectively balance roles and tasks, which could lead to better grade outcomes (Britton & Tesser, 1991; Macan, Shahani, Dipboye & Phillips, 1990). Macan et al. (1990) found that those who reported greater time-management skills perceived themselves as outperforming their peers academically and had higher (self-reported) GPAs. Britton and Tesser (1991) developed a scale to measure time-management skills and found that two aspects of time

management (short-range planning and time attitudes²) together predicted 21% of the variance in grades. Conceivably, students' time-management skills may also alter the amount of work hours they accept, based on their perceptions of being able to manage more/less hours. Time-management skill was therefore tested for its direct effect on both hours worked and GPA. Time management was also tested as a moderator between hours worked and GPA, as someone with excellent time-management skills may be more effective in combining work and study (the same numbers of hours worked may have less negative effect on GPA for someone with higher time-management skills).

2d: Perceived usefulness of work

Students may experience positive benefits from their work; for example, a student may feel their job helps them use their time better, develop useful skills or provides opportunity to apply what they have learnt (Haultain, 2009). If a student feels they are benefiting from work, it is not unreasonable to suggest that they may work more hours; and that doing so may indeed benefit the student academically. A higher level of perceived usefulness of work was expected to predict both a greater number of hours worked and a greater GPA, with hours worked mediating this relationship. One component of perceived usefulness, job relevance, was tested separately as a moderator due to the suggestion by Ma (1984) that it may buffer against the negative effects of employment. It was also considered important to test job relevance because, in piloting the survey, several students communicated their perception that a relevant job would be less detrimental to grades than a non-relevant job. It is important to know if this perception is accurate. Those with more relevant jobs were expected to have higher GPAs than those with less relevant jobs, given the same number of hours worked.

3a: Perceived overload

Role overload has been shown to be negatively associated with job performance, relationship satisfaction and health, and positively associated with stress (Brown et al., 2005).

² Time attitudes: a higher time attitude is reflected by feeling in charge of one's own time and feeling that one uses one's time constructively.

Research on students has shown that academic performance, role overload and perceptions of control are related (Macan et al., 1990). Overload can occur as a result of one demanding role, or be the consequence of combining multiple roles, which on their own would be manageable; however, when combined they create a load that outweighs the individual's ability to meet the demands of all the individual roles (Brown et al., 2005). Perceived overload was tested as a mediator, with the expectation that it would be worse when more hours were spent in employment, making roles (including study) less manageable and, consequently, negatively affecting GPA.

3b: Work–study conflict

Taylor (1998) found that students initially chose work hours that would not interfere with their study. However, over time students reported giving in to pressure from employers and accepting hours that conflicted with their academic lives (Taylor, 1998). There have been mixed findings with regard to the effect of work–study conflict on academic performance. Derous and Ryan (2008) found that while work–study interference mediated the relationship between hours worked and wellbeing, there was no relationship between work–study interference and academic performance or study attitudes. Contrary to this, McInnis and Hartley (2002) found that work–study conflict negatively affected academic performance. To ascertain the presence or absence of an effect, work–study conflict was measured and assessed for its direct effect on GPA, and as a potential mediator between hours worked and GPA.

Lucas and Lammont (1998) discuss how a strategy of combining working hours into one or two days a week may be less intrusive and have less impact on study than spreading the worked hours throughout the week. If students took this approach, then more hours may not equate to greater work–study conflict. The intrusiveness of work on study was measured with a 'potential to clash score', where a job with more shifts worked during the day (9am–5pm) or overnight (11pm–8am) had a greater potential to clash with study via potential interference with lecture/lab/tutorial times, or with sleep. Potential to clash was tested for moderation effects

(hypothesising that greater hours would lead to poorer grades when work had more potential to clash).

3c: Reported negative effect of work on study

Students' reports of the negative effect of term-time employment on their study practices was tested as a mediator between hours worked and GPA. A greater number of hours could lead to more negative effect on study habits and, consequently, poorer grades (assuming that the reported negative effect on study habits is, to some extent, real).

4: Hypothesised moderators

Course load & subject

Previous studies have tended to either focus on only one subgroup (e.g. Nonis and Hudson, 2006, who looked only at business students) or examine undergraduate students broadly (e.g. Derous & Ryan, 2008; Hunt et al., 2004; Ma, 1984). Ford et al. (1995) raised the concern that course load and subject should be taken into consideration in order to clarify the general effects on student GPAs, as well as the load/subject-specific effects. McKenzie and Schweitzer (2010) found that full-time students who were employed part-time had poorer GPAs than part-time students employed full-time, or full-time students who were not employed. Course load was therefore expected to change the ability of a student to combine term-time employment with study (e.g. there may be no relationship between hours and grades for those with a low course load).

Subject was also expected to moderate the hours worked–GPA relationship (the negative effect of hours worked on grades may be worse for a particular subject area). As some students expressed during piloting of this survey, different subjects place differing demands on students. For example, students who are required to construct things (e.g. engineers, fine arts students) may have to spend more time in a physical space; while other subject areas may be more transferrable, allowing easier combination of employment and study (e.g. students may be able to reflect on learning or study while travelling to work or, job permitting, while working).

Reason for working

Derosus and Ryan (2008) found that autonomous motivation to work (work because one wants to, as opposed to working because one feels they must) was positively related to study attitudes. They also found that hours worked interacted with autonomous motivation. Study attitude and academic performance were highest when there was high autonomous work motivation but low working hours. Marsh (1991) found that, for high-school students, the reason for working had a significant impact. Those working to save for college did not experience negative effects of part-time work on their academic performance, whereas those who worked for recreational spending money did. This suggests that the combination of hours worked and a student's reasons for undertaking part-time employment will contribute to the work–study performance relationship. Indeed, Broadbridge and Swanson (2005) called for further investigation into the effect internal and external work motivations have on student adjustment to university life. It was expected that motivations for working would moderate the hours–GPA relationship, with internal motivations lessening the negative effect of hours worked on GPA.

Job flexibility

Students primarily work in service-sector jobs, which are typically characterised as requiring low skill levels, having low pay and high turnover; making the jobs easy to move in and out of (Broadbridge & Swanson, 2006; Ford, Bosworth & Wilson, 1995). The flexibility associated with these jobs would, on the surface, appear advantageous for a student trying to balance study and paid employment. However, uncertainty regarding work availability can provide extra challenges, by making forward planning of workload more difficult (Broadbridge & Swanson, 2006). A lack of certainty over hours available (and fear of not being offered more hours if they refuse some) can lead some students to feel pressured to work all hours offered (Curtis & Lucas, 2001; Lucas, 1997; Moreau & Leathwood, 2006). The benefits of flexibility may therefore mainly accrue to employers, with employers able to decide how and when to use students, and students having little option but to take the hours offered (James et al., 2007;

Moreau & Leathwood, 2006; Smith & Taylor, 1999; Watts, 2001). Broadbridge and Swanson (2005) called for answers in relation to how varying levels of work flexibility affect hours worked and student adjustment variables. In the present study, the flexibility of work was assessed in two areas: flexibility to determine working hours and days, and flexibility to take time off work in times of high study demand (i.e., when exams and assignments are due). Work that allows students the flexibility to decide how many hours to work and when to work is expected to moderate the hours–GPA relationship, lessening the negative effect of hours worked on GPA through less encroachment on preferred study habits.

Quality of work: autonomy, role clarity, skill variety, job demand

Broadbridge and Swanson (2005) recommended that future studies examine how different work conditions may alter the tertiary student's adjustment to university life. Previous research suggests that job autonomy, role clarity, skill variety and workload may be important for students to consider; therefore, they are assessed in the present study for their effect on student GPAs.

Derous and Ryan (2008) found that an autonomy-supportive job context was positively related to study attitude and student wellbeing, yet was not significantly related to grades. Similarly, in a study of high-school students, autonomy in a job role positively affected self-esteem, but did not affect grades (Barling et al., 1995). Despite neither of these studies finding a relationship between job autonomy and grades, the presence of relationships between job autonomy, self-esteem, study attitude and wellbeing suggests that job autonomy could have a role in the hours worked–grades relationship. Thus, it was measured in the present study to verify its effect, or lack of effect (both directly and as a moderator), on the hours worked–GPA relationship.

Role clarity has been shown to moderate the relationship between hours worked and various outcomes. In Barling et al.'s (1995) study (on high-school students), the number of hours worked was negatively related to homework completion (under conditions of low role

clarity), positively related to missing class (under low and average role clarity), negatively related to time use (under low role clarity), and positively related to self-esteem (under high role clarity). Role clarity was therefore investigated for both its direct effect and potential moderating effect on GPA.

Skill variety has also been shown to have moderating effects between hours worked and two outcomes: time use and homework completion (Barling et al., 1995). Hours worked negatively affected these outcomes under conditions of low, but not high, skill variety (Barling et al., 1995). However, skill variety appeared to have no relationship with grades (Barling et al., 1995). It was included in the present study to investigate whether the lack of relationship (direct or moderating) with grades replicates for a university sample.

Finally, workload may also be a moderating job characteristic. In Markel and Frone's (1998) model, work-study conflict was shown to be negatively related to school readiness, which, in turn, was positively related with school performance. Workload was a stronger predictor than hours worked, for work-study conflict. If this model is correct, then it would appear that grades would be more affected by workload than by hours worked. Derous and Ryan (2008) found that high-low job demand interacted with high-low hours to affect study attitude. Study attitudes were most positive when low working hours were combined with high work demands, or high working hours combined with low work demands (Derous & Rayn, 2008). Derous and Ryan (2008) explained this by a high-high combination creating overload, and a low-low combination representing a generally disengaged individual. Due to these findings, job demand was included in the model as a potential moderator. As with Derous and Ryan's (2008) findings, it is expected that any high-low combination of demand and hours will have the least negative effect on GPA. Job demand was measured in four distinct demand areas: intellectual demand, customer demand, physical demand and experienced responsibility.

The aforementioned research suggests that autonomy, role clarity, skill variety and workload could all moderate the relationship between hours worked and student academic

outcomes, making them important variables to measure. Their inclusion also addresses Ford et al.'s (1995) concern that the true effect of employment on students' academic performance cannot be known without consideration of job profiles (how work is structured, and the terms and conditions of a student's employment).

Perceived impact on non-study lives

Students are interested in life beyond study and work. Concerns have been raised that the financial and work pressures facing students are negatively affecting students' wellbeing (Carney et al., 2005; Moreau & Leathwood, 2006) and diminishing time available for leisure, seeing family and sleeping (Ford et al., 1995; McInnes, 2001; van Dyke & Little, 2002). Examining how employment affects other areas of students' lives helps give a fuller picture of the effect of employment. It could also provide valuable insight into how to deal with the expected outcome that more hours worked will more negatively affect student grades. For example, if the majority of students report that working substantially interferes with only their academic life but not other life areas, then students may benefit from advice to take a little time from each area—instead of solely from study—as a way to minimise the negative effect of employment on grades. On the other hand, if students report employment as negatively affecting multiple life areas, it may suggest general overload, and ways to decrease the pressure on students to work would need to be examined.

Method

Participants

University of Canterbury students were recruited to participate in the study. A total of 2,389 students completed and submitted the on-line survey, which represented 16.5 % of all eligible students (all students studying at 400 level or below). First-semester grade information was not available for some participants, primarily because they were enrolled only in whole-year or thesis papers, and a few did not provide an adequate identification code. This resulted in a grade-matched sample of 1,911 participants. Of these, 58.4% (1,116) reported being employed during term-time. Due to excessive missing data or extreme data points, 74 participants were discarded from the analysis, leaving a total sample of 1,837 participants (1,043 employed; 784 non-employed)³. Those employed worked a mean of 13.80 hours ($SD = 9.0$), receiving a mean wage of \$14.64 per hour worked ($SD = 6.02$), with 17.5 % agreeing or strongly agreeing that their job was related to their study, 27.9 % in their first year of study, 5.9 % international students and 38.3 % male. Across the whole sample the mean age was 22.90 years ($SD = 7.40$; $range = 52$). Table 1 gives the percentages of respondents studying toward various degrees, the type of government financial assistance received and reports of debt outside of government student loans.

³ Some students were also discarded due to inconsistency which brought their response to hours worked into question. A maximum potential hours worked was calculated by examining the number of shifts a student reported working. Participants were discarded when the hours reported exceeded the maximum potential by more than two hours. For example, a student reporting that they worked only in one time period (e.g. Monday sometime between 9am and 5pm, a maximum of 8 hours) was discarded for inconsistency if they reported working more than 10 hours per week.

Table 1: Student Demographic Information

Student Degree Code Area (%)		Government Assistance (%) ⁴		Reports Of Debt (%)	
Arts	22.6	Loan for course fees	77.5	No other debt	46.4
Science	21.4	Loan for living costs	44.7	Bank overdraft	24.1
Engineering	16.6	Student allowance for living costs	39.1	Credit card	20.9
Commerce	15.1	No assistance	13.0	Bank loan	4.7
Education	11.4			Other money owing	7.8
Conjoint	10.5			Hire-purchase agreement	7.0
Law	2.3			Mortgage	6.8
				Unpaid bills	6.2

Procedure

All University of Canterbury students enrolled in fourth year-level courses or below (only up to fourth-year courses have graded first-semester papers) were emailed an invitation to participate in the research and a link to the survey ($N = 14,488$). The invitation email is shown in Appendix B. This email was sent to students with the help of the Academic Development Group (University of Canterbury). In addition, the survey was advertised around the university campus using brochures and posters. A total of 2,683 students visited the survey webpage, 2,381 went on to submit responses. Piloting indicated that the survey took between 10 and 15 minutes to complete. All participants were entered into a draw to win one of five \$50 shopping vouchers as a token of thanks for their participation.

Surveys were completed during the second term of the year (May 27th to July 9th, 2010). Students consented (via survey submission) to their student records being accessed for information on course load, year level, subject and grades. They were informed of their right to withdraw the information provided until university records had been accessed, at which point all individual identifying information was removed from the data. The information sheet can be

⁴ Note: The percentages do not add to total 100% because receiving one form of government assistance does not exclude you from receiving other forms.

viewed in Appendix C. Upon grade release, student records were matched to survey responses using the provided student identification (ID) information. This process was conducted independently via the Academic Development Group (University of Canterbury), in order to maximise participant anonymity and to ensure confidentiality of the information collected. The research was reviewed and approved by the University of Canterbury Human Ethics Committee.

Materials

The survey was an extension of that used by Haultain (2009), which measured participation in term-time employment, reasons for participation (or lack of participation), reported negative effect on study, perceived usefulness of job, experienced overload and demographic information. Additional items or scales were added to assess motivation for working, work–study conflict, flexibility of work, quality of work (autonomy, clarity, skill variety, and experienced responsibility), job demand, job relevance, study attitude and time-management skills. Some information was also collected from student records (subject areas and course load). A complete list of variables assessed is defined in Appendix A. The survey can be viewed in Appendix D. The survey was administered via the internet, using LimeSurvey. Below is an explanation of where each measure was taken from and how items were combined. Full scale statistics can be viewed in Appendix E.

GPA

The primary dependent variable of interest was students' academic performance, taken as their GPA (grade-point average: a numerical mean of grades). An objective measure of performance was important, as relying on a self-report measure of effect of part-time employment on grades runs the risk of misreporting.

Work–study conflict

Term-time employed students ($n = 1043$) completed two measures of work–study conflict. The first asked students to indicate the days and times they worked. This information was then used to create a variable of potential conflict between working hours and study, based

on either potential to clash with lectures or to cause sleep disturbance. For each day of the week, students were asked to mark whether they worked and, if so, during which time bracket (8am–5pm, 5pm–11pm, 11pm–8am). Work hours were considered to have the potential to directly conflict with class if they were during 8am–5pm, Monday to Friday, or indirectly via sleep disturbance if they were during 11pm–8am, Sunday to Thursday. The ‘potential to clash score’ was a summation of the total work periods that had the potential to either directly or indirectly (via sleep disturbance) clash with class. The minimum score possible was zero and the maximum 10 (although this maximum is highly unlikely, given that the student would have to be working at some point during each day (Monday–Friday) and each night (Sunday–Thursday)). The mean potential to clash score was 1.35, with a standard deviation of 1.79. Secondly, employed students answered four items from Markel and Frone’s (1998) role conflict scale (e.g. “My job demands and responsibilities interfere with my school work”), and three modified items from Kopelman, Greenhaus and Connolly’s (1983) scale on work–life conflict. The modifications are shown in capitals here, with the removed words italicised: “My work schedule often conflicts with my *family* (STUDY) life”; “My work takes up time that I’d like to spend (STUDYING) *with my family*”; “My job makes it difficult to be the kind of (STUDENT) *spouse or parent* I’d like to be”. Participants rated the extent of their agreement with each item on a five-point scale, with anchors at 1 (not at all), 3 (a little) and 5 (a lot). Principal components analysis of the items ($N = 7$) suggested the presence of one factor, with the first two eigenvalues totalling 4.66 and 0.71. Reliability analysis showed high corrected inter-item total correlations (.53 to .83) and $\alpha = .91$. Consequently, the role conflict score was calculated by averaging all items (minimum possible = 1, maximum possible = 5).

Reported negative effects of work on study and perceived usefulness of work

Those employed during term-time ($n = 1043$) were asked questions from Haultain’s (2009) survey assessing reported effects on study. On a five-point scale, participants rated the extent to which they had experienced (1 = never, 5 = all of the time) five negative statements

(e.g. “How often has your term-time job/s meant that you have missed lectures?”). On another five-point scale (1 = not at all, 5 = a lot), participants rated the extent to which their job had affected time spent on seven study activities (e.g. “To what extent has your term-time job/s affected the time you spend studying independently?”). Participants then rated their agreement (1 = strongly disagree, 5 = strongly agree) with five positive statements (e.g. “My job helps me develop useful skills”) and two global statements (e.g. “Overall my job has positively (negatively) affected my time at university”). Principal components analysis was performed on these 19 items. The scree plot suggested two or three factors (eigenvalues of 7.10, 3.40, 1.42 and 1.18). Based on further testing of two-factor and three-factor solutions, using orthogonal varimax rotation, it was concluded that a two-factor solution was more reasonable. The 12 reported negative effect items loaded on one factor and the five positive items on the second factor. Henceforth, these were termed ‘reported negative effect’ and ‘perceived usefulness’ scales. Reliability analysis for both scales showed acceptable and high corrected inter-item total correlations (reported negative effect $r = .39$ to $.77$; perceived usefulness $r = .40$ to $.77$) and α levels (reported negative effect $\alpha = .92$; perceived usefulness $\alpha = .85$). Each score was calculated by averaging the relevant items (minimum possible score = 1, maximum = 5).

Perceived overload

Term-time employed students answered two items from Haultain’s (2009) survey measuring the experienced overload. The items were, “I feel constantly overloaded because of my job and the demands of my academic work”, and, “I find it difficult to juggle the demands of my job and the demands of my course”. Agreement with these statements was rated from 1 = strongly disagree to 5 = strongly agree. Reliability analysis showed these items were correlated at $.79$ and showed good internal consistency, $\alpha = .88$. Consequently, the two items were averaged into a perceived overload score (minimum = 1, maximum = 5).

Flexibility of employment

Students employed during term rated their agreement (1 = strongly disagree, 5 = strongly agree) with three statements that were generated to assess the flexibility of their work (“I can choose the hours that I work”; “I can choose the days that I work”; “I can choose not to work when I have assignments due or exams”). Reliability analysis indicated that it would be best to combine the first two items into a single scale (flexible days and times) and keep the final item separate (flexible in times of high demand), as this increased Cronbach’s alpha from .78 to .85. The flexibility score was calculated by averaging the two responses (minimum = 1, maximum = 5). The reliability statistics for the two-item scale are correlation, $r = .74$ and $\alpha = .85$.

Job characteristics: autonomy, role clarity, skill variety, job demand

Students employed during term rated how much autonomy, clarity, skill variety and job demand they experienced in their jobs. All items were measured on a five-point scale (1 = strongly disagree, 5 = strongly agree) and averaged to give each score (minimum = 1, maximum = 5). Autonomy was measured by participants rating their agreement with three items from section 1 and 2 of Hackman and Oldham’s (1980) JCM (e.g. “My job allows me to decide on my own how to go about doing the work”). Reliability analysis showed the scale had item-total correlation coefficients of .44 to .76 and $\alpha = .79$.

Role clarity was measured using five questionnaire items from Rizzo (1970). The five items were chosen because, at face value, they were sufficient to measure role clarity and also because space in the questionnaire was limited. The five items with the highest factor loadings onto role clarity were chosen. These items were, “In my job, I feel certain about how much authority I have”; “There are clear, planned goals and objectives for my job”; “In my job, I know when I have divided my time properly”; “In my job I know what my responsibilities are”; “In my job I know exactly what is expected of me”. Reliability analysis showed the scale had item-total correlation coefficients of .46 to .68 and $\alpha = .80$.

Skill variety was measured using three items from section 1 and 2 of Hackman and

Oldham's (1980) JCM (e.g. "My job requires me to do many different things at work").

Reliability analysis showed the scale had item-total correlation coefficients of .65 to .77 and $\alpha = .83$.

Job demand was broken down into four sub-sections. One question measured each of experienced customer demand, intellectual demand and physical demand (e.g. "In my job I deal with very demanding customers"; "My job demands a lot of me intellectually"; "My job demands a lot of me physically"). Physical demand was dropped from later analysis due to potential problems interpreting the statement⁵. These three scores were kept separate. The fourth measured aspect of job demand was experienced responsibility. This was measured using four items from section 3 of Hackman and Oldham's JCM (1980) (e.g. "Whether or not this job gets done is clearly my responsibility") and one additional item—"If I perform badly it would seriously impact others". The additional item was used because the 'serious consequences of performance' element was missing from the other three items. For 'experienced responsibility', reliability analysis showed the scale had item-total correlation coefficients of .39 to .64 and $\alpha = .75$.

Motivation to work

Students' reasons for working during term-time were explored using four items from section 3 of Hackman and Oldham's (1980) Job Characteristics Model (JCM), and nine items from Haultain's (2009) survey. The JCM items measured autonomous motivation to work (e.g. "I feel a great sense of personal satisfaction when I do this job well"; "I feel bad and unhappy when I discover that I have performed poorly on this job"), with participants rating their level of agreement on a five-point scale (1 = strongly disagree, 5 = strongly agree). The nine items from Haultain's (2009) survey assessed other reasons for students working (e.g. "I can't manage just on my student loan"; "I need the money for basic essentials"; "I wanted to buy a particular

⁵ Physical demand was discarded due to two possible interpretations of the item ("my job is physically demanding"). It could be answered either on a conceptual level (e.g. labouring is physically demanding) or in consideration of the hours worked (checkout operating can be physically demanding when worked for a number of hours). This variable could be better measured in the future with two items: one pertaining to the degree of physical activity required in the job, and one asking the extent to which the job affects the employee physically.

item”; “I want the experience”; “My family encouraged me to get a job”). Students rated the extent to which each of the reasons had affected their decision to work (1 = very unimportant, 5 = very important). A principal components analysis was conducted on all items ($N = 12$). The scree plot suggested up to four possible factors (eigenvalues of 2.89, 2.18, 1.76, 1.11 and 0.92). Exploring different solutions by orthogonal varimax rotation resulted in the conclusion that a four-factor solution was reasonable. Three items loaded on what could be labelled a ‘financial necessity’ factor, three items on what could be labelled ‘non-financial motivation’, two items on what could be labelled ‘debt-aversion motivation’, and the remaining five items loaded on what could be labelled an ‘intrinsic motivation to work’ factor. Reliability analysis showed that the items for the factors ‘debt aversion motivation’ and ‘non-financial motivation’ did not form suitable scales, with low item-total correlations and low Cronbach alpha levels (‘debt aversion’ $\alpha = .67$, item-total correlation of .50, and ‘non-financial motivation’ $\alpha = .59$, item-total correlations of .19 to .51). As such, these items were dropped from further analysis. For the ‘intrinsic motivation to work’ scale, the item, “I thought the work would help me get a job when I graduate”, was dropped, as the other four items already formed a complete scale developed by Hackman and Oldham (1980), and dropping this item increased Cronbach’s alpha slightly ($\alpha = .73$ to .75). The reliability statistics for the final ‘intrinsic motivation to work’ scale are item-total correlations of .44 to .67 and $\alpha = .75$. The final reliability statistics for the ‘financial pressure’ scale are item-total correlations of .58 to .66 and $\alpha = .79$. For both of these scales the items were averaged to give the final score (minimum = 1, maximum = 5).

Study attitude

All participants completed this six-item, two subscale (3 items each) measure from the *Learning and Study Strategies Inventory* (Weinstein, Palmer & Schulte, 1987). An example item for the ‘attitude about and interest in’ subscale is, “Success at university is very important to me”. An example from the ‘motivation’ subscale is, “I read text books assigned for my classes”. Participants rated the extent of their agreement with each item on a five-point scale with anchors

at 1 (strongly disagree) and 5 (strongly agree). Principal components analysis of the items suggested that only one factor was present, with the first two eigenvalues being 2.29 and 0.92. Reliability analysis of a single scale showed reasonable corrected inter-item total correlations (.45 to .56) and $\alpha = .67$. Consequently, the study attitude score was calculated by averaging all six items, resulting in a minimum possible score of 1 and maximum of 5.

Time-management skills

All participants completed two subscales (short-range planning and time attitudes) taken from Britton and Tesser's (1991) Time Management Scale. These two subscales were chosen due to Britton and Tesser's (1991) finding that they were significantly correlated with academic performance. Using a five-point scale (1 = never, 5 = always), participants rated the extent to which they carried out each activity. There were a total of seven items for the short-range planning subscale and six items for the time attitudes subscale. For example, "Make a list of the things you have to do each day" (short-range planning subscale), and "You make constructive use of your time" (time attitudes subscale). A principal components analysis of the items ($N = 13$) suggested that two factors were present (eigenvalues of 4.32, 1.78 and 1.09). Accepting a two-factor solution as reasonable and conducting an orthogonal varimax rotation showed the items Britton and Tesser (1991) labelled as short-range planning ($N = 7$) loaded onto one factor, and the items they labelled as time attitudes ($N = 6$) loaded onto another factor. Reliability analysis for the scale *short-range planning* showed good corrected inter-item total correlations (.50 to .73) and $\alpha = .86$. The short-range planning score was calculated by averaging these seven items (minimum possible score = 1, maximum = 5). Reliability analysis for the scale *time attitudes* showed low inter-item total correlations (.12 to .38) and $\alpha = .55$. Hence, the time attitudes subscale was discarded and not used in further analysis.

Results

The results below show the reasons students participated in, or refrained from, term-time employment. Following this is a comparison of the GPA of employed and non-employed students, the predictors of employment status and the predictors of GPA for the whole sample. The focus then shifts to examine the relationship between hours worked and GPA for the employed sub-sample, including investigation of moderating and mediating variables. The section concludes with an analysis of employed participants' views regarding the extent to which the university makes it possible for them to combine term-time employment with study.

Tables 2 and 3 below present the reasons that contribute to students' decisions regarding participation in term-time employment. Beside each reason is the percentage of employed/non-employed students that reported the reason as being important or very important in their decision.

Table 2: Employed Students' Reasons for Working During Term ($N = 1,043$)

Reason	% reporting as important	% reporting as very important	Total % reporting as important/very important
I need the money for basic essentials	23.3	50.6	73.9
I can't manage just on my student loan	17.7	50.3	68.0
I have no choice, my family cannot help me financially	15.7	31.3	47.0
I want the experience	22.5	18.5	41.0
I want to reduce the amount I borrow from StudyLink	13.7	17.3	31.0
I thought the work would help me get a job when I graduate	15.3	12.2	27.5
My family encouraged me to take a job	17.4	7.7	25.1
I wanted to buy a particular item	17.0	7.5	24.5
To avoid taking out a student loan	8.5	11.4	19.9

Table 3: Non-employed Students' Reasons for *Not* Working During Term ($N = 795$)

Reason	% Reporting as important	% Reporting as very important	Total % reporting as important/very important
I want to concentrate on my studies	24.1	64.4	88.5
My academic work would suffer if I had a term-time job	29.1	47.4	76.5
I cannot cope with juggling my studies, work and family commitments	24.5	34.3	58.8
I prefer to take out a student loan than work during term time	25.9	24.5	50.4
I prefer to do other things with my time	28.9	18	46.9
I have been unable to find a job/suitable job	23.9	19.4	43.3
I can manage financially on my student loan	26	12.3	38.3
I am under a lot of pressure from my family to do well	23.2	14.7	37.9
I do not need the money because I can rely on my savings	17.1	8.4	25.5
I do not need to work because my family gives me all the money I need	12.5	7.5	20
I have already done/am currently doing a work placement as part of my studies	5.3	5.6	10.9

Difference in GPA: Employed vs Non-employed

An independent samples t-test showed that there was no significant difference in the mean GPA between those employed ($M = 5.26$, $SD = 2.22$) and those not employed ($M = 5.25$, $SD = 2.29$) during term. The data was then examined to see which variables predicted work status and which affected GPA.

Predictors of Work Status

First, zero-order correlations (see Appendix F) between work status and all other variables were examined. Because of the categorical nature of the dependant variable (work status: employed/non-employed during term), a binary logistic regression was conducted. Work status was regressed onto all variables that were significantly ($p < .05$) correlated with it (whether participants were domestic or international students, in first year or higher, living at home or away from home, students' debt score, sex, age and whether they were studying arts, engineering, education or a conjoint degree). The regression was re-calculated after removing insignificant predictors (round 1: age, studying education or studying conjoint degree; round 2: studying arts). The results of the final binary logistic regression, including the strength of each

predictor's effect, are shown in Table 4 below; the coding of the variables is shown in Appendix G. The results show that students who work are more likely to be not studying Engineering, not in their first year of study, female, with greater debt, living at home and be domestic students. Together, these variables gave an R^2 value of .17.

Table 4: Binary Logistic Regression Results Showing Predictors of Work Status (n = 1,763)

	B	Wald	Sig.
Engineering student	-1.29	69.96	.000
First-year student	-.56	22.54	.000
Female	.48	19.39	.000
Debt score	.21	17.46	.000
Living at home	.47	15.74	.000
Domestic student	.92	15.41	.000
Constant	-.82	11.66	.001

Predictors of GPA

As with work status, zero-order correlations between GPA and potential predictor variables were examined (see Appendix H for the full table of correlations). Because the dependant variable (GPA) is continuous, an ordinary least-squares regression was conducted, regressing GPA onto all variables significantly correlated with it (whether participants were a domestic/international student, debt score, sex, age, whether they were a postgraduate student, whether they were in their first year or higher, time-management (short-range planning) score, study attitude, and whether they were studying commerce or a conjoint degree). The results were recalculated, removing the only insignificant predictor (age). The final regression gave an R^2 of .154 ($F(9, 1737) = 36.2, p < .001$). The results can be viewed below in Table 5. Those with a higher GPA were more likely to have a better study attitude ($\beta = .28$), have less debt ($\beta = -.15$), not be studying commerce ($\beta = -.10$), be higher than first year ($\beta = .09$), be domestic students ($\beta = .08$), be studying at postgraduate level ($\beta = .07$), be female ($\beta = .06$), be studying toward a conjoint degree ($\beta = .06$) and have greater time-management (short-range planning) skills ($\beta =$

.05). Hours worked was not a significant predictor of GPA across the whole sample. This is to be expected, since no difference was found between term-time employed and non-employed students' GPAs. This will be further explored later in the data analysis. Figures 2 and 3 graphically display the predictors of term-time work status and GPA for the whole student sample.

Table 5: Regression Results Showing Predictors of GPA (Whole Student Sample)

	B	Std. Error	Beta
(Constant)	-1.19	.50	
Study attitude	.97	.08	.28**
Debt score	-.31	.05	-.15**
Studying commerce	-.61	.14	-.10**
First year of study	-.45	.11	.09**
Domestic student	.85	.23	.08**
Postgraduate	.89	.28	.07**
Female	.27	.11	.06**
Studying conjoint degree	.42	.16	.06*
Time management (short-range planning)	.14	.07	.05*
* $p < .05$ ** $p < .01$			

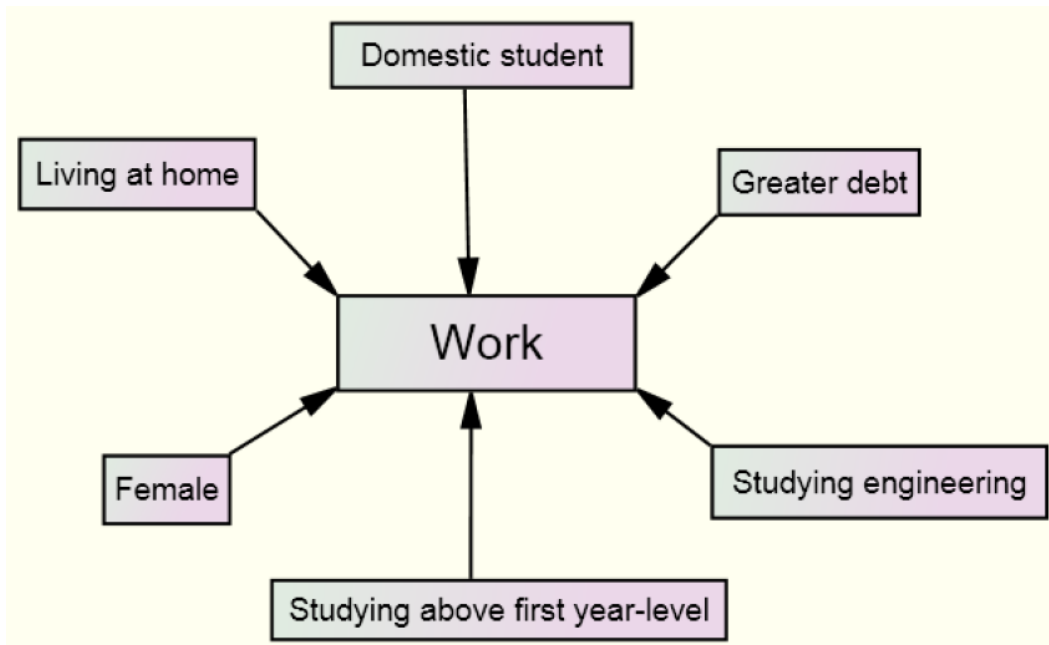


Figure 2: Graphic display of predictors of term-time work status

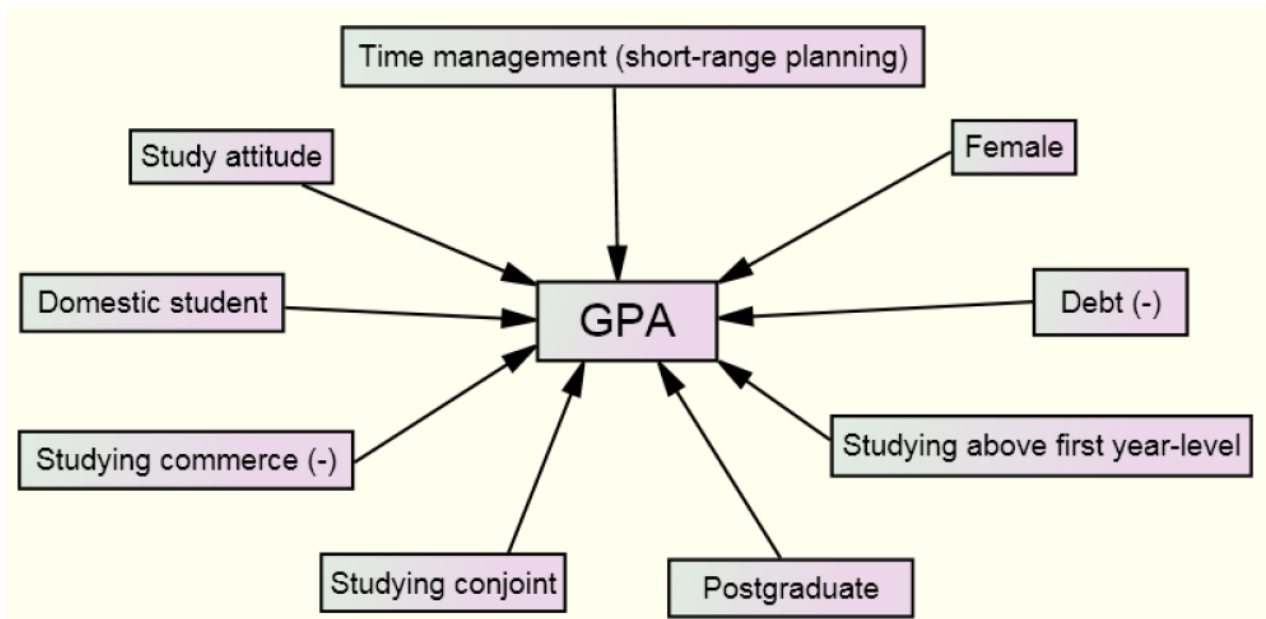


Figure 3: Graphic display of predictors of GPA for whole sample

Term-time Employed Students

Those employed during term were examined as a sub-sample ($N = 1,043$). Of particular interest was whether a relationship existed between hours worked and GPA, and to what extent various job and personal characteristics affected this relationship. A correlation matrix (Appendix I) was computed to identify any problems of multicollinearity. High correlations were found between three variables: work–study conflict, perceived overload and reported negative effect on study; all correlating with each other above .72. Work–study conflict and perceived overload were excluded from further analyses. Reported negative effect of work on study was chosen for inclusion in the analysis because the scale had the highest Cronbach alpha ($\alpha = .92$) and contained the most items ($N = 12$)⁶.

The correlation matrix was also used to discard variables that had no significant correlation ($p > .05$) with GPA or hours worked from the respective regression analyses. The following variables were excluded from the GPA regression analysis: course load, the extent to which work affected students' socialising/relaxing, flexibility of work (both in determining day and time worked, and flexibility in times of high demand), job autonomy, job clarity, job demand (intellectual and customer), potential of work hours to clash with class/sleep, living status (at home or not), whether the student was postgraduate/undergraduate, and the degree to which the student perceived the university as making it possible to combine term-time employment with study. The following variables were excluded from the hours-worked regression: domestic/international student, sex, study attitude, job autonomy, time-management skills, postgraduate/undergraduate student, and the degree to which the student perceived the university as making it possible to combine term-time employment with study.

The correlation matrix showed, as predicted, that the correlation between hours in paid employment and GPA was negative ($r = -.14, p < .001$). Those spending a greater number of hours in paid employment had lower grades.

⁶ The decision to choose the reported negative effect variable was tested later, once the final model had been constructed. Replacing the reported negative effect variable with work–study conflict or perceived overload, the R^2 remained unchanged at .23.

Predictors of Hours Worked (Employed Sub-sample)

The mean number of hours worked per week was 13.76 (Median = 12, $SD = 8.96$, range = 0–60). Hours worked was regressed using an ordinary least-squares linear regression onto all variables significantly correlated with it⁷. Variables that were shown to be insignificant ($p < .05$) were discarded and the regression re-calculated. Refer to Appendix K for variables included in each stage of the regression and the adjusted R^2 values for each regression calculation. The final regression showed that 12 of the variables measured were significant predictors of hours worked during term by employed students; the results are shown in Table 6 below. The final model had an adjusted R^2 of 0.196 ($F(12, 757) = 16.59, p < .001$).

Table 6: Regression Results for Predictors of Hours Worked by Term-time Employees

	B	Std. Error	Beta
(Constant)	.05	2.48	
Customer demand of job	1.10	.21	.17**
Intellectual demand	-1.05	.34	-.16**
Age	.21	.05	.16**
Skill variety	.98	.38	.13**
Debt score	.99	.28	.13**
Perceived usefulness	1.15	.45	.13**
Intrinsic motivation to work	-1.14	.41	-.12**
Financial pressure to work	.77	.25	.11**
Course load	-5.66	2.03	-.10**
Hourly rate	.13	.05	.09*
Job clarity	.85	.39	.08*
Studying engineering	-2.42	1.06	-.08*
* $p < .05$ ** $p < .01$			

⁷ Despite their significant correlation with hours worked, several variables were left out of the regression (effect on socialising/relaxing, leisure/sport, sleep, seeing family, the potential of hours worked to clash with study, difficulty accessing resources, reported negative effect of work on study and GPA). This is because the logical direction of the relationship is that hours worked leads to these effects (not the other way around). For example, it is more plausible that a greater number of hours worked would reduce hours spent socialising/relaxing. For clarity, these variables have not been included in the model shown in Figure 5 (except for those variables which affected GPA). However, the effect of hours worked on each of these outcomes is discussed later.

Predictors of GPA (Employed Sub-sample)

GPA was regressed using an ordinary least-squares linear regression onto all variables significantly correlated with it⁸. Again, insignificant ($p > .05$) predictors were discarded and the regression was recalculated, ultimately leading to the regression results shown below in Table 7. Appendix L has full details of the variables included and the R^2 values for each stage of the regression calculations. The final regression model had an adjusted R^2 value of 0.219 ($F(10, 756) = 22.46, p < .001$). The following were significant predictors of GPA: a better study attitude ($\beta = .24$), debt score ($\beta = -.13$), studying above first year ($\beta = .13$), studying commerce ($\beta = -.13$), hours worked ($\beta = -.13$), studying engineering ($\beta = -.12$), better time-management skills (short-range planning) ($\beta = .11$), being under financial pressure to work ($\beta = -.10$), age ($\beta = .10$) and reported negative effect of work on study habits ($\beta = -.09$). Most importantly, hours worked significantly reduced GPA for those employed during term, confirming the original hypothesis that the more hours spent in term-time employment, the worse a student's GPA.

Table 7: Regression Results for Predictors of GPA for Term-time Workers

	B	Std. Error	Beta
(Constant)	1.47	.61	
Study attitude	.80	.12	.24**
Debt score	-.26	.07	-.13**
Studying above first year	.68	.17	.13**
Studying commerce	-.78	.20	-.13**
Hours worked	-.03	.01	-.13**
Studying engineering	-.99	.28	-.12**
Time management (short-range planning)	.29	.09	.11**
Financial pressure to work	-.19	.07	-.10**
Age	.03	.01	.10**
Reported negative effect	-.23	.11	-.09*
* $p < .05$ ** $p < .01$			

⁸ Excluding the variables work-study conflict and perceived overload, due to problems of multicollinearity with the variable 'reported negative effect'.

Moderation

In designing the survey, a number of variables were measured because of their potential to moderate the relationship between hours worked and GPA. This is an important issue, as the relationship between hours worked and GPA could be different for students with different characteristics (e.g. there may be no relationship between hours worked and GPA for students with high time-management skills, but a strong negative relationship between hours worked and GPA for students with poor time-management skills). To prevent problems associated with multicollinearity between the predictor variable, moderating variable and interaction term, continuous variables were centred (by subtracting the mean from each value, making the new mean = 0) (McClelland & Judd, 1993). GPA was then hierarchically regressed firstly onto hours worked and the (centred) hypothesised moderating variable, and then onto hours worked, the (centred) moderating variable and the interaction term—to see if the interaction predicted unique variance. The following variables were tested for moderation effects: course load, job autonomy, job clarity, flexibility (hours and days), flexibility (times of high demand), skill variety, job demand (intellectual, customer, experienced responsibility), study attitude, time management (short-range planning), financial pressure to work, intrinsic motivation to work, job relevance, potential to clash and subject area. The only effect found was whether a student was studying engineering, with an interaction term of $\beta = -.14$ ($p = .015$). The interaction is plotted in Figure 4 below. As the plotted interaction shows, if a student was studying engineering, then the effect of hours worked on grades was more negative than for students not studying engineering.

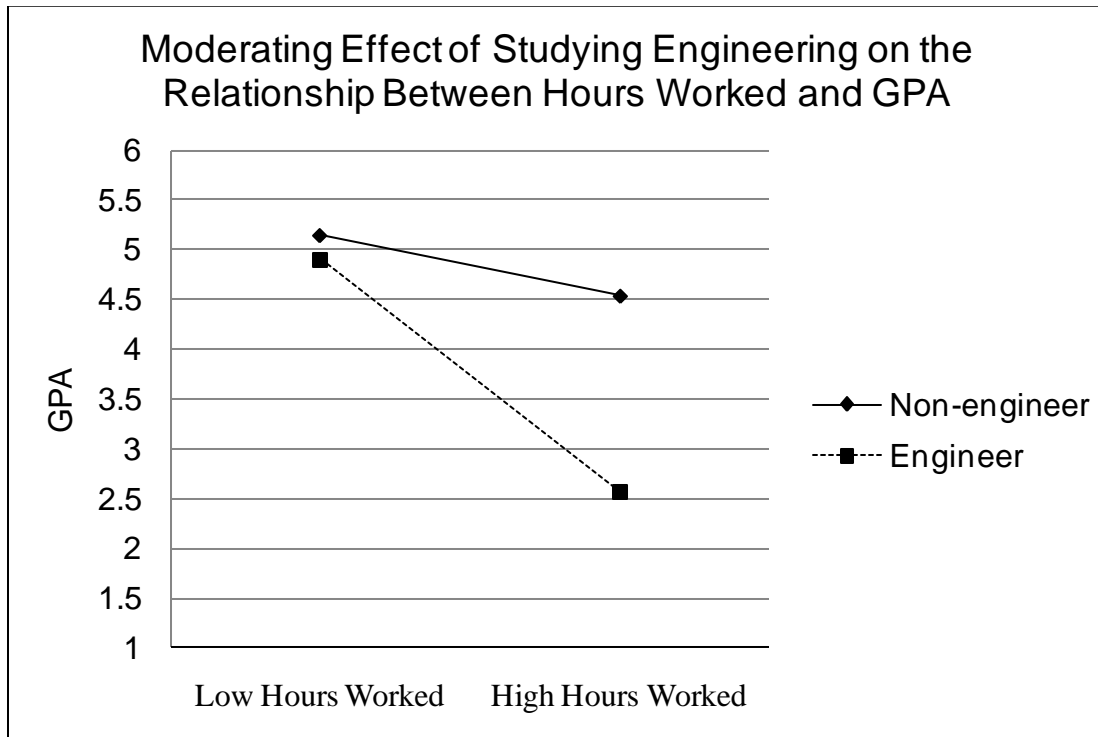


Figure 4: Moderating effect of studying engineering between hours worked and GPA

Mediation

The variables ‘reported negative effect of work on study’, age, debt and ‘financial pressure to work’ were all significantly related to both hours worked and GPA. ‘Reported negative effect’ was tested as a mediator between hours worked and GPA. Hours worked was tested as a mediator between three pairs of variables (age and GPA, ‘financial pressure to work’ and GPA, debt and GPA). Mediation was established according to the four steps recommended by Baron and Kenny (1986).

Reported negative effect as a mediator between hours worked and GPA

When reported negative effect was hierarchically added into the regression of GPA and hours worked, the beta weight between hours worked and GPA decreased from $\beta = -.16$ ($p < .001$) to $\beta = -.08$ ($p = .003$). This drop was significant (Sobel’s test = 2.00, $p = .04$), indicating that reported negative effect of work on study partially mediates the relationship between hours worked and GPA.

Hours worked as a mediator between age and GPA

When hours worked was hierarchically added into the regression of GPA on age, the beta

weight between age and GPA increased from $\beta = .10$ ($p = .05$) to $\beta = .15$ ($p < .001$). This increase was significant (Sobel's test = -4.13, $p < .001$), indicating that hours worked partially mediated the relationship between age and GPA.

Hours worked as a mediator between financial pressure to work and GPA

Adding hours worked hierarchically into the regression of GPA on financial pressure to work caused a significant drop in the beta weight between financial pressure to work and GPA ($\beta = .19$, $p = .001$ to $\beta = .16$, $p < .001$; Sobel's test = 2.51, $p = .01$), indicating that hours worked partially mediated the effect of financial pressure to work on GPA.

Hours worked as a mediator between debt and GPA

Adding hours worked hierarchically into the regression of GPA on debt caused a significant drop in the beta weight between debt and GPA ($\beta = .14$, $p < .001$ to $\beta = .11$, $p < .001$; Sobel's test = -2.41, $p = .016$). This indicates that hours worked partially mediated the relationship between age and GPA.

Final Model

Combined, the aforementioned analyses resulted in the construction of the model shown in Figure 5. This model was tested by regressing GPA onto all variables previously shown to be significant (financial pressure to work, debt, age, hours worked, reported negative effects on study, engineering x hours, first year/greater, time management (short-range planning), study attitude and commerce) in order to examine whether all moderation and mediation effects remained, and to establish final beta weights. All predictors remained significant, with the results presented in Table 8 below. The model had an adjusted R^2 of .23 ($F(10, 756) = 23.89$, $p < .001$).

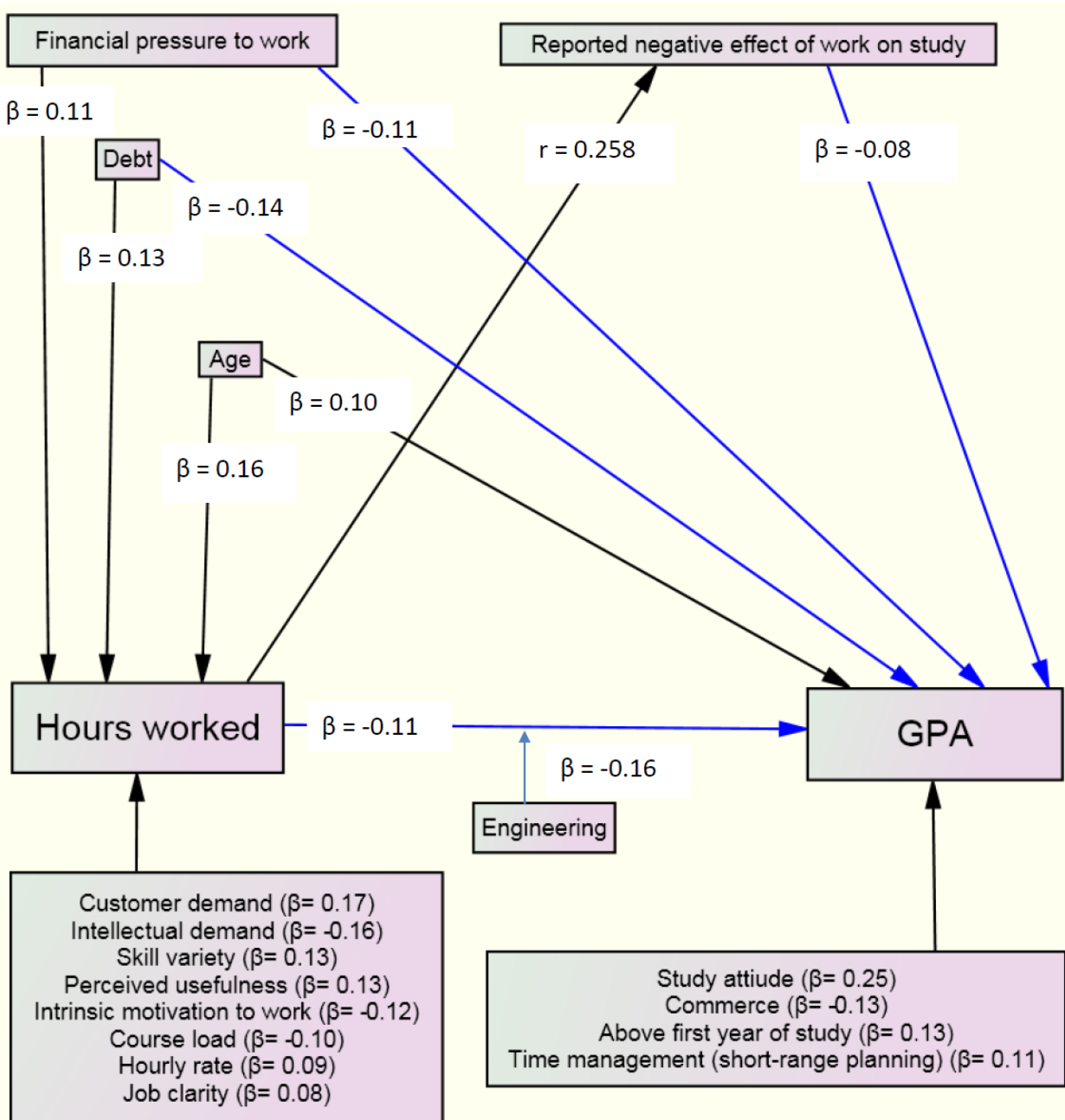


Figure 5: Final model

Note: Blue lines highlight a negative effect of a variable

Table 8: Final Model Test Results—Predictors of GPA

	B	Std. Error	Beta
(Constant)	1.45	.60	
Study attitude	.81	.12	.25**
Studying engineering (moderator, Eng x hours worked)	-.11	.02	-.16**
Debt score	-.26	.07	-.14**
Studying commerce	-.80	.20	-.13**
Studying above first year	.66	.17	.13**
Time management (short-range planning)	.29	.09	.11**
Financial pressure to work	-.20	.06	-.11**
Hours worked	-.03	.01	-.11**
Age	.03	.01	.10**
Reported negative effect	-.22	.10	-.08*
* $p < .05$ ** $p < .01$			

GPA and Term-time Employment

There was no difference in GPA between workers and non-workers, yet hours worked was negatively related to GPA for those that worked. It is possible that the lack of difference between workers and non-workers was because a curvilinear relationship was present (working a few hours boosted academic results, but working over a certain number of hours diminished academic results). This was tested using polynomial regression, but the results indicated that the relationship was *not* curvilinear (when hours squared was added hierarchically into the regression, it failed to explain further variance). An alternative explanation is that those employed during term would have held a higher GPA than those not employed, had they not worked. That is, they are better students and used their advantage to work rather than to obtain better grades. To test this hypothesis, a regression equation was used to calculate the hypothetical GPA of the average employed student working zero hours. The regression equation was $GPA = B_1X_1 + B_2X_2 + \dots + B_{10}X_{10} + C$. The variables in the equation were simply those

shown to affect GPA for working students (including hours worked; see Table 8, p39). B was the unstandardised regression coefficient of each variable. X was the mean of each variable, except for job-related variables (hours worked and reported negative effect of work on study). For hours worked, $X = 0$ (as we are hypothesising zero hours worked). For ‘reported negative effect of work on study’, $X = 1$ (as this is the minimum score possible on this variable and there could be no effect of work given that zero hours were worked). The complete regression equation and calculation can be viewed in Appendix J. The regression equation produced a hypothetical GPA of 5.97 for a student from the employed sub-sample, assuming zero work hours⁹. This compares to a mean GPA of 5.25 for those not employed during term. An independent, two-tailed t-test was performed to test if this difference was significant. The hypothetical mean (employed) GPA was compared to the mean (non-employed) GPA using the standard deviations of each sample’s GPA ($SD\ GPA_{\text{employed}}=2.22$; $SD\ GPA_{\text{non-employed}}=2.30$) and their sample sizes ($N_{\text{employed}} = 1043$; $N_{\text{non-employed}} = 794$). The difference was significant ($t(1835) = 6.70, p < .0001$). This analysis then supports the conclusion that if term-time-working students had not worked, their GPA would be higher than their non-working counterparts.

Non-academic Effects of Term-time Employment

Employed participants rated the extent to which their employment affected their leisure/sport, socialisation/relaxation, sleeping and seeing family on a scale: 1 = work did not affect at all; 3 = work affected a little; 5 = work affected a lot. Over a third of students reported a 4 or 5 for socialising/relaxing (51.6 %), leisure/sport (41.0 %), sleeping (40.1 %) and seeing family (33.1 %). There were high correlations between all of these variables ($r = .48$ to $.67, p < .01$). That is, if you were affected in one area of life, you were likely to be affected in others, too. Not surprisingly, all these variables were also highly correlated with perceived overload ($r = .41$ to $.46, p < .01$).

⁹ An alternative method is to use a simpler regression equation of $GPA = BX + C$, where B is the unstandardised regression coefficient of hours worked. As we are hypothesising zero work hours, $X = 0$; GPA, therefore, = C . When calculated this way, the hypothetical GPA given zero work hours = 5.74. Again, the difference between this hypothetical GPA and the GPA of non-employed students is significant ($p < .0001$).

Further Analysis

As hours worked increased, students' grades decreased. The data also showed that many students report working out of financial necessity. Given this, the data was examined for student perceptions of their ability to effectively combine term-time employment with their study.

One item asked working students, "How often has your term-time job/s meant that you have had difficulty accessing the university's computing facilities/library/learning resources?". Students responded on a five-point scale, where 1 = never; 5 = all of the time. The mean response was 1.65 ($SD = 0.99$), indicating that most students found the university's resources accessible around their employment. However, 13.2 % of students said that work sometimes made accessing the university's facilities difficult; 5.5 % said work often made it difficult, and 1.2 % said work always made it difficult.

A second item asked working students to rate the extent to which they agreed with the item, "My university actually makes it possible to combine term-time work and study (e.g. through late-night access to resources; time-tabling)". Students rated agreement on a five-point Likert scale, where 1 = strongly disagree; 5 = strongly agree. The mean response was 3.33 ($SD = 1.19$), with 9.9 % of students strongly disagreeing and 12.5 % of students disagreeing. Some subjects might be easier to combine with work than others. Table 9 shows the percentage of students making each response to the item by degree code area.

As can be seen in Table 9, whether students find it possible to combine term-time employment and study differs by degree type. Of particular concern are working students studying towards a law, education or science degree, with 31.6 % (law), 26.4 % (education) and 26.1 % (science) disagreeing or strongly disagreeing that the university makes it possible to combine term-time work and study. Interestingly, none of these degree types was significantly related to poorer GPA outcomes in the regression analysis. Therefore, students' perceptions of how well the university enables them to combine employment and study do not seem to affect their ability to combine the two roles.

Table 9: Percentage of Students by Degree Type Agreeing/Disagreeing to Statement, ‘My University Makes it Possible to Combine Term-time Work and Study (e.g. Through Late-night Access to Resources; Time-tabling)’

Qualification	Strongly Disagree	2	3	4	Strongly agree
Average	9.9	12.5	30.1	30.0	17.6
Science	12.6	13.5	29.3	26.1	18.5
Commerce	5.6	14.0	31.5	32.9	16.1
Arts	9.8	11.0	32.6	31.1	15.5
Education	9.7	16.7	30.6	30.6	12.5
Engineering	12.7	9.5	26.2	27.0	24.6
Law	15.8	15.8	21.1	26.3	21.1
Conjoint	6.6	12.3	29.5	34.4	17.2

Discussion

Summary of Research and Results

Changes in tertiary-level education funding have resulted in increasing numbers of students participating in employment during the academic term. This research investigated how such employment affects academic achievement. The resulting knowledge can assist students to make informed decisions regarding the undertaking of work and help guide decisions regarding the financial and other support made available to students. In order to clarify previous research findings, this research used a large and diverse sample of students and measured a broad range of variables (related to individuals, their study and their employment conditions). In line with previous research findings (e.g. Haultain, 2009), the majority (56.8%) of the sample were employed during term-time, with most of these students reporting financial necessity as important or very important in their decision to work (73.9%). In contrast, the majority (88.5%) of non-employed students reported that the desire to focus on their study was important or very important in their decision not to work. Unexpectedly, there was no significant difference in GPA between those employed and not employed. Despite this, analysis showed that as hours worked increased, GPA decreased. Further analysis supported the expectation that working would negatively affect students' GPAs, by showing that the average GPA of workers would have been higher than non-workers', had they not worked. Multiple regression, moderation and mediation analyses resulted in a final model (Figure 5, p. 41). This model shows that hours worked was significantly related to a lowering of GPA, and that this effect was partially mediated by the reported negative effect of work on study (such as decreased study time), and moderated by studying engineering. The model also shows that hours worked mediated the effect of age on GPA (older students worked more and had higher GPAs than younger students, but if they had not worked, then older students would have achieved even higher GPAs than younger). Hours worked also mediated the effect of debt and financial pressure to work on GPA (if students had not worked, then the relationships between debt/financial pressure and GPA

would have been weaker). A number of other variables predicted GPA independently of hours worked (whether a student was in their first year of study, their time-management skills, their study attitude and whether they were studying commerce). Several variables also predicted the number of hours worked, but did not affect GPA (job demand—both customer and intellectual, perceived usefulness of work, skill variety, course load, hourly rate, intrinsic motivation to work and job clarity). Many variables measured had no effect on either GPA or hours worked. Some students felt that the university did not make it possible to combine term-time employment and study, and they had difficulty accessing university resources due to their employment. These key findings are discussed in light of previous research, and recommendations for students, student supporters and institutions are made.

Relationship between Hours Worked and GPA

This research was primarily concerned with clarifying how participating in term-time employment affected students' academic success, measured as GPA. Based on previous research, it was expected that people working a greater number of hours would have lower GPAs; however, it was uncertain whether the relationship would be linear (a consistent negative effect) or curvilinear (an initial positive effect, which becomes negative when x number of hours of employment is exceeded). The findings revealed a negative linear relationship, suggesting that any amount of work will have a negative effect on academic outcomes.

Both Marsh (1991) and Warren (2002) sought to explain the negative relationship between employment and grades (in high-school samples) by focusing on a student's attitude toward study. (Those students who are not interested in academic life seek out employment, obtaining lower grades due to a poorer study attitude, not their employment.) However, this explanation is not suitable for the present results. Firstly, those who were working did not have lower grades than those who were not. Secondly, the results showed that while study attitude had a strong effect on GPA, there was still a significant effect of hours worked on GPA when study attitude was statistically controlled for. Furthermore, study attitude predicted neither work

status nor hours worked. Study attitude may therefore explain the relationship between employment and grades for high-school students, but not for university students. Such a difference could be because university education is not compulsory; those not oriented toward study are unlikely to be present in high numbers in the sample (as supported by the high mean value for study attitude found in this sample, $M = 3.79$, $SD = 0.65$, $range = 1-5$). Moreover, high-school students face differing financial and educational demands, and therefore have different reasons for working when compared to university students (Lucas & Lammont, 1998).

An alternative explanation for the negative effect of hours worked on GPA is that work interferes with students' study habits. Given a fixed number of hours in the day, students must take the hours they spend in employment from somewhere. The interference of work with study habits (such as attending classes and revising for exams) was measured by the variable 'reported negative effects'. Reported negative effects of work on study partially mediated the relationship between hours worked and GPA. As hours of work increased, the reported negative effects of work on study habits increased and, consequently, grades decreased. In other words, work interference with study habits is partially responsible for the negative effect of work on grades. However, this does not necessarily argue for a zero-sum model, which assumes that hours worked are taken solely from study time—a model that has been critiqued by Swanson, Broadbridge and Karatzias (2006), and Warren (2002). Students could take (and did report taking) some hours required for employment out of other areas of their life (e.g. leisure/sport, sleep, family, and socialisation/relaxation time). Yet the significant partial mediation (by the variable 'reported negative effect' of work on study, on the hours–GPA relationship) supports the conclusion that part-time employment will detract from hours spent in study-related activities. The finding of only partial (as opposed to full) mediation could suggest that students underestimate the extent to which they decrease study-related activity relative to hours employed (and therefore underestimate the effect of employment on their grades). Future research could investigate how work alters study habits. One approach would be a longitudinal

diary study, asking students to record the number of hours spent in each type of study activity and in employment. It could also record the frequency of conflict between the two roles and monitor the relationship between the roles over time.

Aside from affecting time spent studying, hours worked may be decreasing GPA through some other means (e.g. tiredness making study time less effective). Although identification of such mechanisms may prove interesting, the important reality remains that a greater number of hours worked leads to a lowering of GPA. As such, regardless of mechanism, decreasing the hours that students work would likely bolster academic outcomes. Students could be advised to work only the minimum hours needed to gain what they desire out of work (e.g. experience or finance). Advising students to work as little as possible may be more helpful than the current practice of recommending a maximum number of hours to work per week (e.g. The Education and Employment Committee's (2001) recommendation of no more than 10 hours a week). Giving students a fixed number, such as 10 hours, may signal that this quantity of paid employment can be managed without negatively affecting academic life—a conclusion which the present results do not support. One issue with any advice is that many students report working out of financial necessity; as such, they may have little choice over the amount they work (Watts, 2002). Therefore, the advice given (work the minimum vs. no more than 10 hours) may have little or no effect on the actual amount students work. Instead, systems of financial support may need to increase students' funding to enable them to make the decision to work less.

Students who work must take into consideration where they will take those hours from. If a student desires that their grades remain as unaffected as possible, then the present research suggests that they should not take time out of study for employment. Taking the time from family, social/relaxation, leisure/sport and sleep had no effect on students' GPAs. However, there is an obvious danger in advising students to draw the time they take for employment too heavily from these other life areas. In line with previous research, students reported a negative

effect of employment on all these areas (Ford et al., 1995; McInnes, 2001; van Dyke & Little, 2002). There were also significant correlations between the reported negative effect of work on these life areas (family, social/relaxation, leisure/sport and sleep) and perceived overload. Furthermore, employment has already been shown to have the potential to negatively affect the physical and mental health of students (Carney et al., 2005). The financial and work pressure facing many of today's students may result in not only less opportunity to process what they are learning, but also in social isolation, stress and ill-health (Carney et al., 2005; Moreau & Leathwood, 2006).

These same issues are seen in the non-student workforce. Research has detailed how conflict between work and home-life is related to life dissatisfaction, mental-health problems and lower workplace efficiency (Frone, Russel & Cooper, 1992). Increasingly, organisations are recognising the need for employees to achieve work-life balance, and are making structural adaptations (such as flexible hours, flexible work locations, compressed work weeks, etc) to assist employees to achieve this balance (Frone, 2003). Similar options may also be available to students (e.g. part-time study, distance learning, multiple lecture and laboratory streams, and, usually, the autonomy to decide when and how to study). However, if the issue is one of general overload (as opposed to time clashes), then such flexibilities may not assist the student; the predicament will remain. If students feel that they must work, then, given a fixed number of hours in a week, where should students take the time to work from? If taken from study, a negative effect on grades is to be expected. If taken from other life areas, then it may lead to social isolation and decreased physical and mental health. The decision, of course, depends on each individual student's needs and responsibilities outside of work and study. However, students should examine how they allocate their time and at least be aware of the potential negative effects of either option. Again, considering so many students reported working out of financial necessity, other people who invest in student performance and student welfare (e.g. government and tertiary institutions) may be interested in monitoring the extent to which

employment is affecting not just academic, but also broader life areas. Such information would help determine how best to support working students.

While the effect of hours worked on GPA is statistically significant, it is also important to consider the practical significance. Because the sample was relatively large, the estimated size of the effect of hours worked on GPA can be calculated reasonably accurately. The calculation of hypothetical GPA (zero work hours) showed that the average GPA of working students would have been 5.97 (B+), instead of the mean GPA of 5.25 (B). Given that the mean number of hours worked was 13.75, this corresponds to a decrease in GPA of 0.052 per hour worked. One hour's work, then, is unlikely to alter a student's GPA (although it could be disruptive in terms of the travel time to work, interruption of study flow, etc). In fact, a drop of 1 GPA point, moving for example from a B+ average to a B average, would be expected if a student worked 19.2 hours ($1/0.052$). The critical question, then, becomes whether the advantages of working this many hours outweigh the cost of decreasing GPA by 1 point (and the cost to other areas of life). By necessity, the answer will differ for each student for two reasons; firstly, the value attached to the costs and gains of working will differ for each student; secondly, the actual cost (of dropping 1 grade point per 19 hours worked) is generalised across the sample, but will, in reality, vary across students. For some students, working less than 19 hours could decrease their GPA by 1 point; others may work more but still maintain the same GPA as when not working.

Taking the sample as a whole, when the negative effect of work on academic performance and life is considered against the positive effect of being able to meet financial demands and gain experience, it may be a reasonable decision of students to work the number of hours that they do. Although there is a clear negative effect on academic achievement, students do seem to be striking a reasonable balance; the average working student seemingly manages to work just enough so that their grades are only negatively affected to the point of parity with the average non-working student. The decision may also be considered reasonable given the alternative of responding to financial needs by accumulating debt. As Haultain (2009) discusses,

this alternative holds its own negative long-term consequences, for both the individual (e.g. decreased mental and physical health) and the economy (e.g. a debt culture and decreased savings). Ideally, financial pressure would not be an issue for students; they would not have to decide whether to accumulate debt or work (and sacrifice better-than-average academic performance). Yet while the reality of financial pressure remains, there will need to be a balance between work, study and debt.

Subject (of Study) Effects

Subjects of study were examined because different subject areas could place different demands on students, affecting their ability to combine work and study. As expected, the subject did make a difference; studying engineering acted as a moderator, with hours worked more negatively affecting the GPA of students studying toward an engineering degree. It is unclear what is different about engineering as a subject; however, it could be that engineering is a more demanding or time-intensive course of study. Alternatively, the subject 'engineering' may be acting as a proxy moderator, with the true moderator being some characteristic of engineering students¹⁰. Another area where subject was important was in students' perceptions of the university. Students who were studying toward a law, education or science degree were more likely to feel the university did not make it possible to combine paid employment with study. Again, the reason is unclear, but these departments are generally less flexible in their program deliveries (e.g. education students must undergo course placements, which could interfere with work; science students' courses usually entail laboratory sessions which tend to be longer (usually three hours) than other subjects' one-hour tutorials). Although the present research does not enable definite answers to these questions, the findings do support the concern that subject area makes a difference for students attempting to combine employment and study. Therefore, caution should be applied when considering results from studies where participants have been studying a specific subject area, as the results may not generalise to students studying in other

¹⁰ See Kenny (2009) for a discussion on "true" and "proxy" moderators.

areas. Future research could clarify the unique demands that face students trying to combine work and study in different subject areas. Where unique demands do exist, different strategies may be needed in order to combine work and study.

Hours Worked as a Mediating Variable

As expected, hours worked partially mediated the relationship between age, debt, financial pressure to work and GPA. When hours worked was included as a mediator, the relationship between age and GPA strengthened. (Older students had higher grades and worked a greater number of hours than younger students; if they had not worked, their grades would have been even higher than younger students'.) Older students may achieve better grades because of a clearer career orientation, making them more focused on specific goals (McInnis, James & McNaught, 1995). They may also achieve better grades because higher year levels are characterised by both older students (due to ageing) and higher grades (possibly because students with lesser academic ability either fail courses or decide to discontinue their study). Older students may work more hours because of year level (as year level increases, so does debt and financial pressure, Haultain, 2009) or because of life circumstances, such as needing additional finances to support family. It is important to note, however, that there was no moderation effect found for age on the hours worked–grades relationship. Even though older students are more likely to work and more likely to achieve higher grades, they have the same level of difficulty in combining employment and study.

Hours worked also partially mediated the debt–GPA and the financial pressure to work–GPA relationships. In both partial mediations, when hours worked was included as a mediator, the relationship between the variable and GPA decreased. Students with greater debt, or greater financial pressure to work, worked a greater number of hours, and this partly explained why they had poorer grades. Importantly, hours worked was only a partial mediator in both instances, meaning that both debt and financial pressure to work had an additional effect on grades beyond the effect caused by working a greater number of hours. This additional effect of financial

pressure on grades could be related to students' mental health. This idea is supported by a two-year longitudinal study which showed that financial stresses were related to students' levels of anxiety and depression, and that these mental-health effects flowed on to negatively affect academic performance (Andrews and Wilding, 2004).

The partial mediation of hours worked between financial pressure, debt and GPA suggests that relieving financial pressure would likely result in fewer hours being worked and, consequently, higher GPAs. It also suggests that relieving the financial pressure felt by students could improve GPA, even if students continued to work the same number of hours. Alleviation of financial pressure could be achieved directly (through financial assistance) or indirectly (through assisting students in budgeting and advising students to avoid debt). Students do have access to services that assist in both of these ways through StudyLink (a government agency providing financial assistance to students), universities (e.g. the University of Canterbury's budgeting advice service), student associations (e.g. the University of Canterbury Student Association's emergency hardship grant and food bank) and other government agencies (e.g. sorted.co.nz: a free and independent money-management website). However, despite these interventions, students still feel financially pressured, and the current results suggest that this pressure is decreasing students' academic success. This leads one to question the extent to which students are aware of these services, whether students are utilising the services and how effective the services are. The utilisation of these services and their effectiveness in relieving financial pressure could be investigated in future research.

Independent Effects on GPA

Some variables affected GPA independently of hours worked. Lower grades were found for commerce students, which may reflect differences in marking style and/or difficulty between degree areas. Higher year levels were characterised by higher GPAs. This was in line with expectations, as higher year levels should contain more able students (lower-achieving students may be more likely to opt out of the education system or be unable to continue due to low

grades). In line with previous research, better time-management skills (Britton & Tesser, 1991) and a positive study attitude (Marsh, 19991; Warren, 2002) also resulted in higher academic performance. All of these variables also affected GPA in the entire sample. Therefore, regardless of work status, good study attitude and time-management skills will assist students to achieve higher grades.

A moderating effect of time management on the relationship between hours worked and GPA was expected, but not found. The lack of finding was surprising, as better time-management skills were expected to assist students in balancing the task demands that competed for their time (Britton & Tesser, 1991). The time-management items used in the present study reflect the traditional time-management advice of setting goals, planning and prioritising (Britton & Tesser, 1991). The implication of the findings is that these activities appear to not assist students in combining employment and study. An alternative explanation is that social desirability may have biased the results, where some students report higher time-management behaviours than they actually exhibit, because they see time-management behaviours as being positive. However, this alternative explanation seems unlikely, as it would predict a high mean time-management score (the actual mean was 3.15, $SD = 0.83$, with a total possible range of 1 to 5). Even though the results here suggest that time-management skills do not assist students to combine work and study, they remain valuable to the extent that they did positively predict GPA.

Independent effects on hours worked

Alongside the already-discussed variables of financial pressure, debt and age, a number of other variables did relate to the number of hours students worked, but had no direct, mediating or moderating effects on GPA. People were likely to spend a greater number of hours employed if their job had greater customer demand but less intellectual demand. Students may be more willing to take on a greater number of work hours if their job has a different kind of demand to what they experience at university (i.e., intellectual). Alternatively, intellectually

demanding jobs may offer fewer hours to students (e.g. being a tutor for a university course offers only a set number of hours), or those working in customer service may be expected to work a higher minimum number of hours. Overall, it is unclear whether the findings represent student choice or industry norms. Students were also likely to work more if they perceived their work was useful, if their job had greater skill variety, if they had a lower course load at university and a greater hourly pay rate. These features of work (perceived usefulness of work, skill variety and higher pay) are all positive and likely to be valued by students. However, they had no effect on GPA. Therefore, while these job features may be attractive, students should be cautious about responding to the attraction by working more hours than they otherwise would, as doing so would likely flow on to negatively affect their grades.

Interestingly, those with stronger intrinsic motivations for working (work for enjoyment, rather than external benefits) were likely to work fewer hours. Perhaps students' intrinsic motivations (e.g. enjoyment) for working are satisfied with fewer hours of work than extrinsic motivations (e.g. needing a certain amount of money). Alternatively, students' perceptions of work may become bleaker as they increase their hours. For example, two hours of data entry may be viewed as a pleasant, intrinsically motivating break from study, while eight hours may be viewed as tedious. If extrinsic motivations for working could be lessened (e.g. by lessening financial need), then students may still choose to work for intrinsically motivating reasons. However, the number of hours worked would likely be less and, consequently, their academic results would be less negatively affected.

Another variable affecting hours worked was the hourly rate. Students who were paid a higher hourly rate worked more. Perhaps any negative effects students do experience from working are outweighed by their perceptions of extra financial gain. If students are working beyond the minimum amount they need for survival, then relieving financial pressure to work may not improve student grades, unless some restriction was placed on the number of hours a student could work. In fact, such restrictions already exist. For any New Zealand student

receiving a government student allowance, a maximum of \$195.78 gross per week can be earned (at the minimum wage of \$12.75 an hour, this equates to 15.4 hours' work). If a student earns more than this amount, their allowance decreases dollar for dollar (StudyLink, 2010). Some scholarships also have restrictions on the number of hours a student can work. Considering the earlier calculation, which predicted that an average of 19 hours' work would be required to cause a drop of 1 grade point, the current restriction level of approximately 15 hours at minimum wage seems appropriate. However, it should again be stressed that individual students may be more or less affected by the same quantity of work, so a strategy of minimising work hours is recommended. Overall, the restrictions imposed by StudyLink and scholarship boards seem a sensible way to counter the temptation that may exist for students to work a greater number of hours in response to higher pay, and may therefore limit the negative effect of work on grades.

No Effects

Despite the expectations generated from previous research, a number of variables had no bearing on GPA. Variables were measured either because they had been found as significant in previous studies, or because other researchers had called for further investigation regarding their significance. Where previous significant results had been found, the studies mostly examined fewer variables. Thus significant past results may have been obtained because the underlying causal variable was not measured. The present study measured a large number of variables across a large and diverse sample. Therefore, where no statistically significant effect of a variable was found, the null result would indicate that such a variable is unlikely to have an important real-world effect. Two variables (job relevance and job flexibility) are interesting to highlight for their lack of effect. Job relevance was expected to have a positive effect on GPA, based on student expectations raised during piloting of this survey, and based on research by Ma (1984), who found a non-significant positive effect of hours on GPA for those holding jobs related to their study (and subsequently called for further investigation). This study replicates the

non-significant finding across a much larger sample, indicating that a relevant job provides no advantage to academic outcomes. The lack of finding does not mean that there are no benefits to working in a job that is relevant to the area of study. Such a job may provide benefits including potential work opportunities upon graduation, or greater appeal in the labour market.

Another important variable that was found to have no effect on GPA was job flexibility. There was no effect of having either an inflexible job in terms of days and times that the employee had to work, or in terms of not being able to take time off during periods of high demand (such as when assignments or exams were due). Perhaps students find ways to overcome inflexible job conditions. If job inflexibility causes students to miss class, then such strategies may include sharing notes, utilising video lectures or undertaking additional independent study. If they cannot take time off in times of high academic demand, students may become better organised, planning their time in anticipation of due dates. Future research could investigate the extent to which working students use these resources and strategies to aid them in balancing the roles of student and employee. Overall, the results suggest that either the strategies students currently use are sufficient to prevent job inflexibility from negatively affecting grades, or that job inflexibility does not matter.

Limitations

An obvious limitation inherent in the use of multiple regression is that only a relationship can be asserted, not the underlying causal mechanism (Cook & Campbell, 1979). Another obvious limitation in the design of this study is its cross-sectional nature. This was partially overcome by taking all survey measures prior to the release of grades. This practice ensured that perceptions of employment were not affected by students trying to account for their grades. The general causal direction towards grade outcomes, therefore, seems reasonable. By statistically controlling many variables, this study has shown which of the measured variables are important in grade outcomes. However, the full interaction of these variables may be clearer in a longitudinal study, which could examine how these variables interact over time and focus on

broader outcomes than a single semester's GPA. The present research showed that hours worked partially mediated the effect of financial pressure and debt on GPA; it also showed that the negative effect of work on study habits partially mediated the effect of hours worked on GPA. Future research could focus on these important variables, determining how to relieve financial pressure and debt, as well as how to assist employed students in minimising the negative effect of their employment on study habits.

A further limitation is that the study examined students from only one university. There may be idiosyncratic, demographic qualities that make the results unique to students of similar backgrounds and studying at similar universities. Other research has also tended to examine the effect of employment on students from western cultures (e.g. Broadbridge & Swanson, 2006; James, et al., 2007; Long & Hayden, 2001; Manthei & Gilmore, 2005; Moreau & Leathwood, 2006; Robotham, 2009; Smith & Taylor, 1999). Therefore, future research could examine the extent to which these results replicate for students of different backgrounds and students studying at different types of tertiary institutions.

A final criticism could be made regarding a lack of overt definition for the variable 'financial pressure'. In this study, the participant interpreted for themselves the meaning of, for example, 'I need the money for basic essentials'. There may be differences in terms of what students consider 'essential'. (Is it essential to buy meat? Is it essential to have a car?) Differences in defining needs should not be surprising considering the difficulties in defining poverty (Stephens, Waldegrave & Frater, 1995). Although Broadbridge and Swanson (2005) criticise such a lack of definition for the variable financial necessity, the concept remains important despite the imprecision. It is not the intention of the present research to define an objective level of income required to meet a student's most basic needs. The study aims to show the relationship between two objective variables: hours worked and GPA. Perceived financial pressure affected both of these variables and is therefore important. The finding highlights that where students perceive they are working out of financial necessity (by their own standards),

there is likely to be a negative effect on grade outcomes. The subjective nature of the financial pressure variable may, however, change the advice that should be given to students. If a student perceives they are working out of financial pressure, then a review of their situation should inform supporters of how to deal with the perceived financial pressure—which could include direct financial relief or questioning the student's perception of necessity.

Concluding Remarks

The research sought to clarify the relationship between hours worked and GPA, and to highlight important variables that either explained or changed that relationship. While at first glance the final model appears complex, it should be remembered that this is primarily the result of controlling for various independent effects on hours worked and GPA. For the purpose of assessing the effect of employment on academic outcomes, most importantly, there is a direct negative effect of hours worked on GPA. This was partially mediated by the reported negative effect of work on study, and moderated by studying engineering. Hours worked then partially mediated the effect of financial pressure to work, debt and age on GPA. The importance of these findings is summarised in the following recommendations for students, their supporters and educational institutions.

The decision of how many hours to be employed varies from student to student. The findings here are indicative of generalised effects; there will obviously be a wide range of employment experiences which will combine to uniquely affect individuals. Nevertheless, there is a significant relationship between hours worked and grades, where working approximately 19 hours would be expected to decrease a student's GPA by 1 point (e.g. B+ to B). Outside of financial necessity, a decision regarding hours worked will likely depend on the perceived gains and losses of such employment. In order for students to make informed decisions, they should be aware of the negative effect of employment on grades (both directly and as mediated by work negatively effecting study behaviours). While some may be aware of the negative effect of

employment on their study, others may not. StudyLink¹¹, a major source of both finances and financial advice for students, advises that study should come first and that a balance between work and study is needed (StudyLink, 2010). However, the section of the website discussing part-time employment focuses on various work options (working over vacations, working part-time, taking a year off to work, or working full-time while studying part-time) and the benefits of work. The website also states, “If you’ve already got a job: keep it!” (StudyLink, 2010b). As such, students may have a skewed view towards the positives of employment. In order for students to make an informed decision, they should be aware of both the positives and negatives of employment. Such information could be communicated by inclusion on relevant websites (e.g. StudyLink and student-support sections of university websites).

Once aware of potential effects, students should consider, based on the whole of their circumstances, where they will take the time needed for their employment from. Taking it from study time may reduce grades; however, taking it from other areas of life may decrease physical and mental health. Another consideration for students may be year level. The difference between, for example, a B and B+ (or B+ and A-) average may be more critical for a student in their final year of study, as they may face a competitive graduate job market. Subject-specific pressures should also be considered. This research holds particular warning for engineering students; as a subgroup their grades were worst affected by combining employment and study. Finally, while jobs that are related to a student’s subject area may provide some advantages, according to this study they do not seem to provide any academic advantage. Therefore, students working in jobs relevant to their studies should work the minimum number of hours necessary to gain the advantages of a relevant job (e.g. experience and contacts), but should not take on additional hours thinking it will assist their grades.

In addition to students, there are a number of other parties concerned with students’ university experiences and academic performance. These include those close to the student,

¹¹ StudyLink is a New Zealand Government agency which provides financial assistance to students in the form of student loans, living allowances, scholarships and special grants.

those in industry and government. Their interests remind us that student experience and performance benefits not only the student, but also wider society (Codd, 2002; The Independent of Higher Education Funding and Student Finance, 2010). Those who do have an interest in student performance should encourage students to think carefully about the number of hours they work and the effect on both their grades and wider life. Perhaps the most useful advice to all kinds of supporters would be to acknowledge the financial pressure many students feel they are under, and to work within their various supporting capabilities to relieve some of that pressure, with the hope of giving students more choice and control in regard to how many hours are worked. Those in industry may have a dual interest in students. At one level they are interested in students for what students can provide their organisations in the present (a flexible, able and relatively cheap workforce; Curtis and Lucas, 2000). Yet on another level, some organisations may be interested in students' academic performance so that they are provided with a more able workforce in the future. The final model shows that job-related factors (job demand, skill variety, job clarity) influenced hours worked but did not directly affect students' GPAs. The implication is that there may be little that organisations employing a student workforce can do to buffer the negative effect of hours worked on GPA. However, organisations could assist students and industry by cultivating a more experienced workforce, giving them opportunity to learn skills that are not taught in the classroom or reflected in GPA. The perceived benefits of workplace experience are reflected by employers giving preference to students who can demonstrate such experience (Harvey, 1998; Rodger et al., 2007).

Finally, educational institutions have a role to play. While they cannot necessarily relieve the financial pressure that drives much student work, they do play a large part in assisting students to succeed despite the need to work. Some students in this study had difficulty accessing resources and/or felt that the university did not make it possible to combine employment and study. Moreau and Leathwood (2006) claimed that the nature of being a student has changed, yet universities to date have been slow to follow suit. Swanson et al. (2006)

call for innovative development of educational resources and delivery which deliberately seeks to integrate learning and transferable skills from the workplace into the curriculum. They argue that this will assist students to combine their various roles in ways that minimise stress and optimise wellbeing and achievement, ultimately attracting and retaining students while promoting achievement (Swanson et al., 2006). The present findings reinforce that, for many, employment comes with the territory of being a student. Institutions should develop their course delivery and student-support systems with this reality in mind. The University of Canterbury has many support structures (such as study spaces, offsite access of university documents, online journal articles and online learning spaces), offering students access outside of standard open hours. Some courses offer flexible delivery through multiple lecture/laboratory/tutorial streams and online content delivery. These innovations are likely to be useful to students, and further innovations are likely as technology continues to advance. Yet that some students still experience difficulty accessing resources or feel the university does not make it possible to combine work and study is a concern. It may be helpful to seek student input into the reasons why, despite these innovations, some students are still experiencing these difficulties. Such information could then be used to generate solutions to better enable students to combine their two roles. Studies show that over half of the student population in New Zealand and many other western countries are working (Broadbridge & Swanson, 2006; James, et al., 2007; Long & Hayden, 2001; Manthei & Gilmore, 2005; Moreau & Leathwood, 2006; Robotham, 2009; Smith & Taylor, 1999). This reality gives universities an opportunity to differentiate themselves via their support services for working students, which could be leveraged to attract future students and produce better graduates. Ultimately, this will benefit the university, its students and, hopefully, wider society.

The relationship between hours worked and GPA is complex but clearly present. Each party discussed here can play a part in relieving the negative effects of student employment. Students can seek to budget well and be deliberate about the amount of time they devote to

employment and study. Supporters can encourage students to limit the number of hours they work and provide financial relief, while academic institutions can create flexible and dynamic learning environments. The best results will occur when all three parties act together, so that as individuals and as a country, the gains received from the investment in tertiary education can be maximised.

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Appendix A: List and Definitions of Variables

Age: Students age in years.

Autonomy: The extent to which a student could within their employment determine themselves how to do the work assigned.

Course Load: A numerical value denoting the extent to which a student is the equivalent of a full time student (EFTS). Each university course has an EFTS value and these are summated for each student. A value of 1 indicates they are full time.

Debt Score: A score calculated based on the types of debt a student reporting having outside of student loan (one other type of debt = score of 1, two types = 2 etc). A total score of 7 was possible.

Flexibility: The degree to which the student could chose the days, times and quantity of hours they wished to work.

GPA: Grade point average, a numerical value of achievement averaged over courses using course grade and weight. The numerical value assigned to each grade at the University of Canterbury is as follows:

A+	A	A-	B+	B	B-	C+	C	C-	D	E
9	8	7	6	5	4	3	2	1	0	-1

Hourly Wage: A self report estimation of money received per hour worked.

Hours Worked: The self reported average amount of hours spent per week in employment during term-time.

Job Clarity: The degree to which a student within their job felt they knew what was expected of them.

Job Demand: Measured as customer demand, physical demand, intellectual demand and experienced responsibility (although physical demand was later dropped due to two different possible interpretations of the item).

Job Relevance: The degree to which the student's job was associated with their area of study.

Living Status: Whether the student is living with their guardians or not.

Perceived Overload: A two item measure of how much students felt overloaded and found it difficult to juggle the demands of being a student with being an employee.

Perceived Usefulness of Job: Perceived usefulness items reflected that work was perceived in some way to assist the student (through being related to their study, giving opportunity to apply their study, giving access to resources for their study, helping them manage their time better and developing useful skills).

Potential to Clash: measure of work interference, focusing on the time of day that the student was employed. Work hours worked during the day (8am-5pm) were considered to have the potential to directly clash with lectures, labs or tutorials. Work hours worked overnight (11pm-8am) were considered to have the potential to clash with lectures, labs or tutorials indirectly through sleep disturbance. Total potential to clash score was a summation of these time periods.

Reason for Working (financial pressure/intrinsic motivation): Factor analysis indicated reasons for working were able to be formed into two main categories. Intrinsic motivation for working (work because the students wanted to work) or financial pressure (work because feel they need the money). There were other reasons for working, both internal and external. However these did not form into suitable scales.

Reported Negative Effect on Study: A measure of how much work was perceived to interfere with academic study behaviours.

Sex: Students sex (male/female)

Skill Variety: The degree to which the student's employment required them to exercise a range of skills in order to perform.

Study Attitude: A score reflecting attitude about, interest in and motivation to study.

Subject: The main area that the student was studying in, as determined by their degree code (Commerce, Arts, Law, Education, Science, Engineering). Conjoint indicated that the student was studying toward two separate degrees at the same time.

Time Management: Two measures were taken (short-range planning and time attitudes) however only the short-range planning scale had satisfactory scale statistics. As such, the term time-management, unless otherwise specified, is referring to short-range planning. Short-range planning represents self-report behaviours of planning ones time.

Work-study Conflict: A measure of role conflict, where a higher score indicated that work interfered with study.

Year: The year level at which the student is studying.

Appendix B: Invitation Email

Subject line: Student study: The effect of student employment

Dear (student name),

You are invited to participate in a confidential web based survey about the impact of student employment. We are interested in surveying all students completing any course in semester 1, whether you are employed, casual, or non-employed. The hope is that this research will give further insight into the impact that employment has on students and help us understand student's reasons for working. Findings will be used to advise students and others about the benefits and pitfalls of student employment.

For such advice to be useful it is critical that a wide range of students, from all levels of University and all academic areas participate. Therefore, your participation would be greatly appreciated.

One outcome variable is student grades, as such, the information sheet informs you that your grades will be matched with your survey responses. Please be assured that this will be done by an independent assistant, John Ogier (Academic Development Group) and will be computer assisted, data will be made anonymous before it is passed onto the researchers.

As a thank you, you will be entered into the draw to win one of five \$50 Westfield Mall vouchers.

If you think you may be interested in participating then please click the link below, this will take you to the full information sheet.

<http://bit.ly/studentworksurvey>

Regards,
Jessica Richardson

Please note: This survey is being conducted as Masters research under Professor Simon Kemp, Department of Psychology. It has gained ethics approval from the Canterbury Human Ethics Committee. If you have any questions please contact Jessica at jjc57@uclive.ac.nz

pp John Ogier (Academic Development Group) Rm 430 Law

Appendix C: Participant Information Sheet

You are invited to take part in a study investigating the effects of part-time work on student experience and performance.

Your participation in this study involves filling in a questionnaire, it should require at most 10 to 15 minutes of your time. As a thank-you you will be entered into the draw to win one of 5 \$50 Westfield Mall shopping vouchers.

It is vital for our understanding of the issues raised in this questionnaire that we know your actual grades while at university. This information will be accessed via student records, it will be strictly confidential and will only be used by us for research purposes. No individuals and their grades will be identified in our study. The information will not be passed on to anyone else.

By submitting the questionnaire it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved. The information you provide will not be linked back to you in any way. Please note, that submission of this questionnaire will be taken as your consent. You may withdraw your participation, including withdrawal of any information you have provided, up until the time your responses have been matched with your academic record. Because all identifying information will be removed then, your responses cannot be retrieved after that time.

To answer the questions please mark the appropriate boxes, or type in your answers where necessary. We are interested in your personal opinions. Please fill in the questionnaire on your own, without conferring with anyone else.

The project is being carried out by Jessica Richardson towards a MSc in Applied Psychology, under the supervision of Prof Simon Kemp (Psychology Department) and Dr. Sanna Malinen (Management Department) at the University of Canterbury. If you have any questions or concerns, you can contact Jessica at jjc57@uclive.ac.nz (Ph. 3667001, ext 7099), Simon at simon.kemp@canterbury.ac.nz (Ph. 366 7001, ext 6968) or Sanna at sanna.malinen@canterbury.ac.nz (Ph. 366 7001, ext 7006).

All information collected will remain confidential, and the data will be securely stored at all times. This research has been reviewed and approved by the Psychology Department of the University of Canterbury and the University of Canterbury Human Ethics Committee low risk review process.

Appendix D: Survey

Please note:

- 1) *Some questions were only asked of one subgroup. Conditions are shown below questions, for example: [Only answer this question if you answered 'Both vacations and term-time' or 'Term-time only' to question '5']. These conditions were automatically applied—the computer only presented the question to the participant if they met the conditional criteria.*
- 2) *Questions with an * were compulsory, the participant could not continue the survey without giving a response for these questions.*

Have Your Say: The impact of part-time work on student experience and performance

You are invited to take part in a study investigating the effects of part-time work on student experience and performance. Your participation in this study involves filling in a questionnaire, it should require at most 10 to 15 minutes of your time. As a thank-you you will be entered into the draw to win one of 5 \$50 Westfield Mall shopping vouchers.

It is vital for our understanding of the issues raised in this questionnaire that we know your actual grades while at university. This information will be accessed via student records, it will be strictly confidential and will only be used by us for research purposes. No individuals and their grades will be identified in our study. The information will not be passed on to anyone else.

By submitting the questionnaire it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved. The information you provide will not be linked back to you in any way. **Please note, that submission of this questionnaire will be taken as your consent.**

You may withdraw your participation, including withdrawal of any information you have provided, up until the time your responses have been matched with your academic record. Because all identifying information will be removed then, your responses cannot be retrieved after that time.

To answer the questions please mark the appropriate boxes, or type in your answers where necessary.

We are interested in your personal opinions. Please fill in the questionnaire on your own, without conferring with anyone else.

The project is being carried out by Jessica Richardson towards a MSc in Applied Psychology, under the supervision of Prof Simon Kemp (Psychology Department) and Dr. Sanna Malinen (Management Department) at the University of Canterbury. If you have any questions or concerns, you can contact Jessica at jjc57@uclive.ac.nz (Ph. 3667001, ext 7099), Simon at simon.kemp@canterbury.ac.nz (Ph. 366 7001, ext 6968) or Sanna at sanna.malinen@canterbury.ac.nz (Ph. 366 7001, ext 7006).

All information collected will remain confidential, and the data will be securely stored at all times. This research has been reviewed and approved by the Psychology Department of the University of Canterbury and the University of Canterbury Human Ethics Committee low risk review process.

There are 26 questions in this survey

Participant Information

What is your full name? *

Please type your answer here:

What is your student ID number? *

Please type your answer here:

(If you don't know your University ID number, could you please write your user code (e.g. abc12))

General

Do you receive a...? Please mark all that apply, and type the amount you receive each week. *

- Student loan for my course fees?
- Student Loan for Living Costs?
- Government Student Allowance?
- I do not have a Student Loan or a Student Allowance?

Do you owe money on any of the following (excluding your student loan)? Please mark all that apply AND please give an approximation of how much is owed

Please choose all that apply and provide a comment:

- No debts at all
- Bank overdraft
- Other loan from bank (excluding mortgages)
- Mortgage
- Credit cards/ store cards
- Hire purchase agreements
- Unpaid bills
- Other money owed

This semester, since February 22, 2010, have you worked/will you work? *

Please choose **only one** of the following:

- Not at all
- Vacations only
- Term-time only
- Both vacations and term-time

Term Time Workers General Job Characteristics

Thinking about your term-time job/s this academic year:

(please note: If you work casual hours, please answer with an approximation, to the best of your ability)

In the last month, how many hours (across all jobs) have you worked EACH WEEK, on average? *

[Only answer this question if you answered 'Both vacations and term-time' or 'Term-time only' to question '5']

Please type your answer here:

What was your average hourly rate?

[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' to question '5']

Please type your answer here:

USUALLY I would work within the hours of.. (Please mark as many boxes as apply, mark the box if you work WITHIN these time periods). Please note, the work periods are broken down by days and then into three time periods (8am-5pm, daytime; 5pm-11pm, evening; and 11pm-8am late shift/night shift/ early morning shift)*

[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' to question '5']

Please choose **all** that apply:

- Monday 8am-5pm
- Monday 5pm-11pm
- Monday 11pm - 8am
- Tuesday 8am-5pm
- Tuesday 5pm-11pm
- Tuesday 11pm-8am
- Wednesday 8am-5pm
- Wednesday 5pm-11pm
- Wednesday 11pm-8am
- Thursday 8am-5pm
- Thursday 5pm-11pm
- Thursday 11pm-8am
- Friday 8am-5pm
- Friday 5pm-11pm
- Friday 11pm-8am
- Saturday 8am-5pm
- Saturday 5pm-11pm
- Saturday 11pm-8am
- Sunday 8am-5pm
- Sunday 5pm-11pm
- Sunday 11pm-8am

Factors effecting decision to work

How important were each of the following factors in your decision to work during term time?
[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time'
to question '5']

Please choose the appropriate response for each item:

	Very Unimportant 1	2	Neutral 3	4	Very Important 5
I can't manage just on my student loan					
I need the money for basic essentials					
I have no choice, my family cannot help me financially					
I wanted to buy a particular item					
I want to reduce the amount I borrow from StudyLink					
I want the experience					
To avoid taking out a student loan					
My family encouraged me to take a job					
I thought the work would help me get a job when I graduate					

Were there any other things that affected your decision to work? Please list them and rate how important this factor was (5 = very important, 3= somewhat important, 1= not at all important) [Only answer this question if you answered 'Both vacations and term-time' or 'Term-time only' to question '5']

Please type your answer here:

Impact of Term-Time Work

How often has your term-time job/s meant that you have: Please mark one box per statement [Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' to question '5']

Please choose the appropriate response for each item:

	Never	Rarely	Some of the time	Often	All of the time
Missed lectures					
Missed seminars/tutorials/classes					
Missed deadlines for assignments and course work					
Had difficulty accessing the university's computing facilities/library/learning resources					
Produced poorer quality assignments than if you had not worked					

To what extent has your term-time job/s affected the time you spend on: (Please mark one box per statement)

[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' to question '5']

Please choose the appropriate response for each item:

	1= Not at all	2	3 = A little	4	5 = A lot
Studying independently					
Reading					
Preparing/writing assignments and course work					
Revising for exams					
Using my university's library/learning resources					
Using my university's computing facilities					
Leisure and sports					
Socialising and relaxing					
Sleeping					
Seeing my family					

Please indicate to what extent you agree with each of the following statements: (Please mark one box per statement)

[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' to question '5']

Please choose the appropriate response for each item:

	1= Not at all	2	3 = A little	4	5 = A lot
My work schedule often conflicts with my study life					
My job/s makes it difficult to be the kind of student I'd like to be					
Because of my job/s, I go to university tired.					
My job/s demands and responsibilities interfere with my university work.					
I spend less time studying and doing homework because of my job/s.					
My job/s takes up time that I would otherwise spend doing university work					
When I'm at school, I spend a lot of time thinking about my job/s					

Job Characteristics

Please tell us how flexible your term-time work is: Please tick one box per statement

[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' to question '5']

Please choose the appropriate response for each item:

	Strongly Disagree 1	2	3	4	Strongly Agree 5
I can choose the hours that I work					
I can choose the days that I work					
I can choose not to work when I have assignments due or exams on					

Please indicate how much you agree with the following statements: (Please mark one box per statement)

Note: If you have more than one job/causal work, please answer what is generally true of the jobs you work.

[Only answer this question if you answered 'Term-time only' or 'Both vacations and term-time' or 'Vacations only' to question '5']

Please choose the appropriate response for each item:

	Strongly Disagree 1	2	3	4	Strongly Agree 5
My job allows me to decide on my own how to go about doing the work					
The job gives me considerable opportunity for independence and freedom in how I do the work					
The job denies me any chance to use my personal initiative or judgment in carrying out the work					
My job requires me to do many different things at work, using a variety of my skills and talents					
My job requires me to use a number of complex or high-level skills					
My job is quite simple and repetitive					
It's hard, on this job, for me to care very much about whether or not the work gets done right					
My opinion of myself goes up when I do this job well					
Generally speaking, I am very satisfied with this job					
Most things I have to do on this job seem useless or trivial					
I feel a great sense of personal satisfaction when I do this job well					
The work I do on this job is very meaningful to me					

Please indicate the extent to which you agree with the following statements

Note: If you have more than one job/causal work, please answer what is generally true of the jobs you work.

[Only answer this question if you answered 'Both vacations and term-time' or 'Term-time only' or 'Vacations only' to question '5']

Please choose the appropriate response for each item:

	Strongly Disagree 1	2	3	4	Strongly Agree 5
I feel a very high degree of personal responsibility for the work I do on this job					
I frequently think of quitting this job					
I feel bad and unhappy when I discover that I have performed poorly on this job					
I feel I should personally take the credit or blame for the results of my work on this job					
I am generally satisfied with the kind of work I do in this job					
My own feelings generally are not affected much one way or the other by how well I do on this job					
Whether or not this job gets done right is clearly my responsibility					
In my job, I feel certain about how much authority I have					
There are clear, planned goals and objectives for my job					
In my job, I know when I have divided my time properly					
In my job I know what my responsibilities are					
In my job I know exactly what is expected of me					

To what extent do you agree with the following statements about your job/s: Please mark one box per statement

Note: If you have more than one job/causal work, please answer what is generally true of the jobs you work.

[Only answer this question if you answered 'Vacations only' or 'Term-time only' or 'Both vacations and term-time' to question '5']

Please choose the appropriate response for each item:

	Strongly Disagree 1	2	3	4	Strongly Agree 5
I feel constantly overloaded because of my job and the demands of my academic work					
My job is related to my studies					
I find it difficult to juggle the demands of my job and the demands of my course					
My job gives me opportunities to apply knowledge and skills from my studies					
My job helps me develop useful skills					
Overall, my job has negatively affected my time at university					
Overall, my job has positively affected my time at university					
My university actually makes it possible to combine term-time work and study (e.g. through late night access to resources; time-tabling)					
My job helps me use my time better					
My job gives me opportunities to access resources that I can use for my studies					
If I perform badly it would seriously impact others					
My job demands a lot of me intellectually					
My job demands a lot of me physically					
In my job I deal with very demanding customers					

Reasons for not working

How important were each of the following factors in your decision not to work during term-time? (Please mark one box per statement)

[Only answer this question if you answered 'Not at all' or 'Vacations only' to question '5']

Please choose the appropriate response for each item:

	Very Unimportant 1	2	Neutral 3	4	Very Important 5
I prefer to take out a student loan than work during term-time					
I do not need to work because my family gives me all the money I need					
I want to concentrate on my studies					
I have been unable to find a job/suitable job					
I can manage financially on my student loan					
I prefer to do other things with my time					
My academic work would suffer if I had a term-time job					
I cannot cope with juggling my studies, work and family commitments					
I am under a lot of pressure from my family to do well					
I do not need the money because I can rely on my savings					
I have already done/am currently doing a work placement as part of my studies					

Are there any other reasons you chose not to work during term-time? Please list them and rate the importance of this reason in deciding not to work (1= very unimportant, 3=some what important, 5= very important)

[Only answer this question if you answered 'Not at all' or 'Vacations only' to question '5']

Please write your answer here:

Final Section

These questions are extremely important. They will help us analyse whether students from different backgrounds have different attitudes towards term-time work. We realise that some of these questions may seem quite personal. Please be assured that your answers are totally confidential. The information will be used only for statistical analysis and your personal details will not be attributed in any reporting.

Are you...?

Please choose **only one** of the following:

- Female
 Male

How old are you? (in years)

Please type your answer here:

Are you currently living with...?

Please choose **only one** of the following:

- Two parents (including guardians or step parents)
 One parent/guardian
 Not living with parents/guardians

Please answer to what extent you... (Please mark one box per statement)

Please choose the appropriate response for each item:

	1= Never	2	3= Sometimes	4	5= Always
Make a list of the things you have to do each day					
Plan your day before you start it					
Make a schedule of the activities you have to do for study or work					
Write a set of goals for yourself for each day					
Spend time each day planning					
Have a clear idea of what you want to accomplish during the next week					
Set and honor priorities					
Find yourself doing things which interfere with your schoolwork simply because you hate to say "No" to people					
Do you feel you are in charge of your own time, by and large?					
On an average class day do you spend more time with personal grooming than doing schoolwork?					

	1= Never	2	3= Sometimes	4	5= Always
Do you believe that there is room for improvement in the way you manage your time?					
You make constructive use of your time					
Do you continue unprofitable routines or activities?					

Please answer the extent to which you agree with the following statements: (Please mark one box per statement)

Please choose the appropriate response for each item:

	Strongly Disagree 1				Strongly Agree 5
Success at University is very important to me					
I feel confused and undecided as to what my educational goals should be					
In my opinion, what is taught in my courses is not worth learning					
I read text books assigned for my classes					
I don't care how good my assignments are, as long as I get them done					
I seem to be able to find all kinds of excuses for not studying					

Submit

Thank you for completing this survey.

Appendix E: Scale Statistics

Variable	α	<i>N</i> (items)	<i>N</i> (respondents)	M	SD	Variance
Role conflict	.910	7	1010	3.458	1.025	1.051
Study attitude	.673	6	1790	3.792	.654	.427
Time management (short-range planning)	.862	7	1785	3.132	.828	.685
Perceived usefulness	.847	5	971	2.473	.976	.953
Reported negative effect	.921	12	899	2.344	.822	.675
Perceived overload	.881	2	1022	2.930	1.192	1.421
Financial pressure	.791	3	903	3.700	1.190	1.417
Intrinsic motivation	.753	4	981	3.47	.896	.803
Flexible (hours/days)	.852	2	1027	2.902	1.304	1.700
Autonomy	.785	3	1010	3.156	1.073	1.150
Clarity	.801	5	969	3.832	.770	.593
Skill variety	.833	3	1018	2.873	1.175	1.382
Experienced responsibility	.749	4	976	3.505	.859	.738

Appendix F: Zero-order Correlations (Work Status)

** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

		Work (1) / not (0)
Worker (1) / not (0)	Pearson Correlation	1
	Sig. (2-tailed)	
EFTS (course load)	Pearson Correlation	-.024
	Sig. (2-tailed)	.336
Domestic student (1) / International (0)	Pearson Correlation	.113**
	Sig. (2-tailed)	.000
Female (1) / Male (0)	Pearson Correlation	.185**
	Sig. (2-tailed)	.000
Age	Pearson Correlation	.078**
	Sig. (2-tailed)	.001
Debt score	Pearson Correlation	.158**
	Sig. (2-tailed)	.000
Postgraduate (1) / undergraduate (0)	Pearson Correlation	.042
	Sig. (2-tailed)	.084
First year (1) / Greater (0)	Pearson Correlation	-.139**
	Sig. (2-tailed)	.000
Time management short range planning	Pearson Correlation	.036
	Sig. (2-tailed)	.137
Study attitude	Pearson Correlation	.015
	Sig. (2-tailed)	.546
Living at home (1) / away (0)	Pearson Correlation	.072**
	Sig. (2-tailed)	.003
Science (1) / not (0)	Pearson Correlation	.036
	Sig. (2-tailed)	.145
Commerce (1) / not (0)	Pearson Correlation	-.007
	Sig. (2-tailed)	.774
Arts (1) / not (0)	Pearson Correlation	.117**
	Sig. (2-tailed)	.000
Engineering (1) / not (0)	Pearson Correlation	-.292**
	Sig. (2-tailed)	.000
Education (1) / not (0)	Pearson Correlation	.077**
	Sig. (2-tailed)	.002
Law (1) / not (0)	Pearson Correlation	-.001

	Sig. (2-tailed)	.952
Conjoint (1) / not (0)	Pearson Correlation	.085**
	Sig. (2-tailed)	.000

Appendix G: Coding of Categorical Variables for Binary Logistic Regression of GPA onto Whole Sample

Coding of Categorical Variables			
		Frequency	Coding
Employed	Employed	1002	1
	Non-employed	761	0
Engineering student	Studying engineering	293	1
	Not	1470	0
First year student	Studying in first year	495	1
	Studying above first year	1268	0
Living at home	Living at home	537	1
	Living away from home	1226	0
Female	Female	1077	1
	Male	686	0
Domestic student	Domestic student	1668	1
	International student	95	0

Appendix H: Zero-order Correlations (GPA, Whole Sample)

** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

		GPA10S1
Worker (1) / not (0)	Pearson Correlation	.001
	Sig. (2-tailed)	.981
EFTS (course load)	Pearson Correlation	.014
	Sig. (2-tailed)	.560
Domestic student (1) / International (0)	Pearson Correlation	.105**
	Sig. (2-tailed)	.000
Female (1) / Male (0)	Pearson Correlation	.102**
	Sig. (2-tailed)	.000
Age	Pearson Correlation	.062**
	Sig. (2-tailed)	.008
Debt score	Pearson Correlation	-.105**
	Sig. (2-tailed)	.000
Postgraduate (1)/ undergraduate (0)	Pearson Correlation	.081**
	Sig. (2-tailed)	.001
First year (1)/ Greater (0)	Pearson Correlation	-.077**
	Sig. (2-tailed)	.001
Time management short range planning	Pearson Correlation	.174**
	Sig. (2-tailed)	.001
Study attitude	Pearson Correlation	.309**
	Sig. (2-tailed)	.000
Living at home (1)/ away (0)	Pearson Correlation	-.010
	Sig. (2-tailed)	.668
Science (1) / not (0)	Pearson Correlation	.022
	Sig. (2-tailed)	.353
Commerce (1)/ not (0)	Pearson Correlation	-.141**
	Sig. (2-tailed)	.000
Arts (1)/ not (0)	Pearson Correlation	.036
	Sig. (2-tailed)	.127
Engineering (1)/ not (0)	Pearson Correlation	-.017
	Sig. (2-tailed)	.461
Education (1)/ not (0)	Pearson Correlation	.014
	Sig. (2-tailed)	.549

Law (1)/ not (0)	Pearson Correlation	-.041
	Sig. (2-tailed)	.076
Conjoint (1) / not (0)	Pearson Correlation	.111 **
	Sig. (2-tailed)	.000

Appendix I: Zero-order Correlations (Employed Sub-sample)

** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

		GPA10S1	Hours worked
GPA10S1	Pearson Correlation	1	-.143**
	Sig. (2-tailed)		.000
	N	1043	1043
Hours worked	Pearson Correlation	-.143**	1
	Sig. (2-tailed)	.000	
	N	1043	1043
EFTS10S1	Pearson Correlation	.038	-.297**
	Sig. (2-tailed)	.228	.000
	N	1037	1037
Domestic/ International	Pearson Correlation	.068*	.056
	Sig. (2-tailed)	.030	.074
	N	1038	1038
Female/Male	Pearson Correlation	.104**	.035
	Sig. (2-tailed)	.001	.263
	N	1043	1043
Age	Pearson Correlation	.076*	.359**
	Sig. (2-tailed)	.014	.000
	N	1038	1038
Debt score	Pearson Correlation	-.138**	.283**
	Sig. (2-tailed)	.000	.000
	N	1043	1043
Hourly rate	Pearson Correlation	.088**	.233**
	Sig. (2-tailed)	.004	.000
	N	1037	1037
Flexibility (exams)	Pearson Correlation	.001	-.130**
	Sig. (2-tailed)	.985	.000
	N	1029	1029
Intellectual Demand	Pearson Correlation	.036	.137**
	Sig. (2-tailed)	.252	.000
	N	1019	1019
Customer demand	Pearson Correlation	-.044	.170**
	Sig. (2-tailed)	.163	.000
	N	1016	1016

Study attitude	Pearson Correlation	.324**	.057
	Sig. (2-tailed)	.000	.070
	N	1013	1013
Perceived overload	Pearson Correlation	-.156**	.310**
	Sig. (2-tailed)	.000	.000
	N	1018	1018
Intrinsic motivation to work	Pearson Correlation	.123**	.081*
	Sig. (2-tailed)	.000	.011
	N	977	977
Flexible (hours and days)	Pearson Correlation	.035	-.103**
	Sig. (2-tailed)	.264	.001
	N	1023	1023
Autonomy	Pearson Correlation	-.009	.033
	Sig. (2-tailed)	.786	.291
	N	1006	1006
Clarity	Pearson Correlation	-.046	.134**
	Sig. (2-tailed)	.151	.000
	N	966	966
Skill variety	Pearson Correlation	.067*	.194**
	Sig. (2-tailed)	.032	.000
	N	1014	1014
Experienced responsibility	Pearson Correlation	.068*	.098**
	Sig. (2-tailed)	.033	.002
	N	972	972
Potential to clash	Pearson Correlation	.037	.233**
	Sig. (2-tailed)	.229	.000
	N	1043	1043
Home / away	Pearson Correlation	.004	.133**
	Sig. (2-tailed)	.890	.000
	N	1007	1007
Work–study conflict	Pearson Correlation	-.139**	.361**
	Sig. (2-tailed)	.000	.000
	N	1006	1006
Time management (short range planning)	Pearson Correlation	.206**	.036
	Sig. (2-tailed)	.000	.252
	N	1012	1012

Financial pressure to work	Pearson Correlation	-.189**	.225**
	Sig. (2-tailed)	.000	.000
	N	899	899
Reported negative effect	Pearson Correlation	-.247**	.362**
	Sig. (2-tailed)	.000	.000
	N	895	895
Perceived usefulness	Pearson Correlation	.076*	.137**
	Sig. (2-tailed)	.019	.000
	N	967	967
Post/under graduate	Pearson Correlation	.036	.041
	Sig. (2-tailed)	.246	.184
	N	1043	1043
First year / higher	Pearson Correlation	-.123**	-.082**
	Sig. (2-tailed)	.000	.008
	N	1043	1043
Conjoint	Pearson Correlation	.121**	-.076*
	Sig. (2-tailed)	.000	.014
	N	1043	1043
Commerce	Pearson Correlation	-.122**	.008
	Sig. (2-tailed)	.000	.784
	N	1043	1043
Science	Pearson Correlation	.019	-.081**
	Sig. (2-tailed)	.541	.008
	N	1043	1043
Arts	Pearson Correlation	.067*	.036
	Sig. (2-tailed)	.030	.248
	N	1043	1043
Engineer	Pearson Correlation	-.078*	-.110**
	Sig. (2-tailed)	.012	.000
	N	1043	1043
Education	Pearson Correlation	-.032	.182**
	Sig. (2-tailed)	.296	.000
	N	1043	1043
Law	Pearson Correlation	-.020	.043
	Sig. (2-tailed)	.512	.165
	N	1043	1043

Appendix J: Calculation of Hypothetical GPA (Zero Work Hours)

$$Y = B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 + B_{10}X_{10} + B_{11}X_{11} + C$$

$$\begin{aligned} \text{GPA(hypothetical)} = & B_{\text{Engineerxhours}} X_{\text{Engineerxhours}} (-0.111 \times 1.029) + B_{\text{Age}} X_{\text{Age}} (0.034 \times 23.36) + \\ & B_{\text{Hours worked}} X_{\text{Hours worked}} (-0.033 \times 0) + B_{\text{Negative effect}} X_{\text{Negative effect}} (-0.232 \times 1) + B_{\text{debt score}} X_{\text{debt score}} (- \\ & 0.257 \times 0.928) + B_{\text{financial pressure}} X_{\text{financial pressure}} (-0.196 \times 3.695) + B_{\text{first year}} X_{\text{first year}} (0.656 \times 1.776) \\ & + B_{\text{time mgmt}} X_{\text{time mgmt}} (0.288 \times 3.148) + B_{\text{study attitude}} X_{\text{study attitude}} (0.810 \times 3.801) + B_{\text{commerce}} X_{\text{commerce}} \\ & (-0.796 \times 0.148) + C (1.45) = 5.97 \end{aligned}$$

Final model test results, predictors of GPA

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.45	.60		2.40	.017
Study attitude	.81	.12	.25	6.88	.000
Studying engineering (moderator, Eng x hours worked)	-.11	.02	-.16	-4.92	.000
Debt score	-.26	.07	-.14	-3.73	.000
Studying commerce	-.80	.20	-.13	-4.05	.000
Studying above first year	.66	.17	.13	3.85	.000
Time management (short range planning)	.29	.09	.11	3.22	.001
Financial pressure to work	-.20	.06	-.11	-2.95	.003
Hours worked	-.03	.01	-.11	-2.92	.004
Age	.03	.01	.10	2.62	.009
Reported negative effect	-.22	.10	-.08	-2.13	.034
a. Dependent Variable: GPA10S1					

Appendix K: Regression Steps for Predictors of Hours Worked (Term-time Employed Subsample)

Step 1.

Variables included in the regression: course load, age, debt, hourly rate, flexibility (times of high demand), flexibility (days/hours), intellectual demand, customer demand, intrinsic motivation, clarity, variety, experienced responsibility, living at home/away, financial pressure, perceived usefulness, 1st year/higher.

$R^2 = .195$ ($F(18, 712) = 10.836, p < .001$).

Variables deleted for recalculation: Experienced responsibility ($p = .264$), home/away ($p = .384$), first year/greater ($p = .215$).

Step 2.

$R^2 = .198$ ($F(13, 756) = 15.581, p < .001$).

Variables deleted for recalculation: Education ($p = .086$)

Step 3. Final regression

$R^2 = 0.196$ ($F(12, 757) = 16.59, p < .001$).

No further exclusions necessary.

Appendix L: Regression Steps for Predictors of GPA (Term-time Employed Subsample)

Step 1.

Variables included in the regression: hours worked, domestic/international student, sex, age, debt score, hourly rate, study attitude, intrinsic motivation, skill variety, experienced responsibility, time management (short range planning), financial pressure to work, reported negative effect, perceived usefulness, first year/higher, conjoint, commerce, arts, engineering.

$R^2 = .0251$ ($F(19, 678) = 13.303, p < .001$).

Variables deleted for recalculation: Domestic/international ($p = .207$), sex ($p = 0.732$), hourly rate ($p = 0.194$), skill variety ($p = 0.284$), experienced responsibility ($p = 0.153$), perceived usefulness ($p = .284$), arts ($p = .148$).

Step 2.

$R^2 = .230$ ($F(12, 727) = 19.411, p < .001$).

Variables deleted for recalculation: intrinsic motivation ($p = .128$), conjoint ($p = .127$).

Step 3. Final regression

$R^2 = 0.219$ ($F(10, 756) = 22.455, p < .001$).

No further exclusions necessary.