

Background, Time Use,
and Educational Attainment:
A Study of Undergraduate Students

by

Emily Etcheverry

A thesis presented to the
Faculty of Graduate Studies, University of Manitoba
in partial fulfillment of the requirements
for the degree of

Master of Education

in

Educational Administration and Foundations

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Abstract

This is a study of the effects of students' time use upon their educational attainment. Data were obtained from 308, Faculty of Education undergraduate students at the University of Manitoba. A stratified random cluster sampling procedure was used to select classes of students who were administered a Faculty self study questionnaire. A structural equation modeling technique is used to test the relationships between the 14 variables (gender, age, father's occupation, father's education, years of previous university, credit hours, motivation, self concept of ability, time spent attending class, time spent studying, time spent volunteering or student teaching in schools, time spent in paid employment, grade point average and educational expectations) in the theoretical model. Pearson Product Moment correlation coefficients for all variables in the model, and regression coefficients to estimate the magnitude of the effects of variables within the model and an interaction effect are reported. Results indicate that neither students time use in paid employment nor student time use in activities related to their student status has a significant effect upon their grade point averages or their educational expectations when other variables are taken into account. Further studies to explain more of the variability in students' time use and the effects of time usage are indicated.

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CHAPTER 1

Introduction

Throughout their lives people are involved in many activities which relate to the roles they play in society. Role behaviour is varied in relation to the many different statuses or positions held by individuals. Parent, friend, worker, and student are but a few examples of the statuses which people hold. Some statuses, such as that of friend, can be life long, others are more limited in their duration. The status of post secondary student is a status in which individuals are normally engaged for a relatively short but intense period of time in their lives. However, education is of focal importance because it has implications for the future career and socioeconomic aspirations of individuals.

Individuals do not typically engage in role behaviour associated with a single status at a time, rather they often hold many statuses simultaneously. Furthermore, the role expectations associated with holding a variety of statuses are considered by some to create conflicts for resources, such as time and energy, that are needed to meet role expectations (Goode, 1960). According to these theorists,

role conflict occurs when the role demands of different statuses are at variance with one another. In their study of university students, Albas and Albas (1984) note that students are often dealing with competing role demands related to social, leisure, and work activities. If time is considered to be a limited resource, and each activity takes time, role conflicts arise out of the need for time to meet the role demands and expectations of the variety of statuses the students hold.

If, on the other hand, role demands and involvement in many activities stimulate energy, time may, in a sense "expand". Individuals who are involved in many activities, may, because of the energy stimulated by involvement, do more, in a given period of time, than others who are less involved and, therefore, have less energy. The notion that time expands in association with involvement in multiple statuses, as described by Marks (1977), challenges the assumption that different statuses are necessarily independent of one another and competing with one another for time. The interdependence of statuses, which Marks' theory suggests, is supported by others who have studied the effects of involvement in multiple statuses (see Thoits, 1983; Moen, Dempster-McClain & Williams, 1989). These researchers have identified positive effects associated with individuals holding many statuses. Thoits (1983), for

example, noted that involvement in multiple statuses enhances psychological well-being and functional behaviour, and Moen et al. (1989) illustrated that people who were involved in many statuses lived longer than people who were involved in fewer statuses.

The use of time for employment represents one potential source of role conflict for individuals who are students. In fact, the employment of students is of particular interest now, because of increases in student employment over the past decade (Grogan, 1989). Specifically, the percentage of full time students, aged 15 to 24, reporting that they are employed, has increased from approximately 29% in March 1980 (Statistics Canada, 1980) to almost 41% in March of 1989 (Statistics Canada, 1989). Some people see this trend as problematic, while others view it as advantageous. Those who see this as problematic tend to link the employment of students with poor academic achievement and high drop out rates from school (see Radwanski, 1987). Others tend to view increased student employment as advantageous. Linda Jones, a career counsellor with the Vancouver School Board, for example, considers that work experience fosters independence, develops employment skills, and develops self-esteem in students (Grogan, 1989).

These opposing views of the impact of the employment of students have been expressed in relation to high school students, but there is some evidence that the same issues may be relevant to post secondary students as well. For example, some university faculty members express concerns that students who are spending time working are often doing things which are counterproductive to their academic goals. Professors often raise the concern that these students have reduced attention in class because they are tired, and that they often have difficulty meeting the deadlines for assignments. Some students also express similar concerns. For example, an informal survey of students in Medical Rehabilitation at the University of Manitoba in the spring of 1989 indicated that employment was considered by a large majority to be an undesirable necessity that students engage in for financial reasons. Employment was seen by the majority of the students to be undesirable because of the time it takes away from studying, extracurricular activities, family, and leisure activities. All of these activities were considered important aspects of well-balanced life styles. Time conflicts resulting from employment were reported by many students to be undesirable because they increase stresses which they found to have a negative effect upon their academic performance.

Nevertheless, some students seem to find that involvement in work has a positive effect upon their academic performance. Work sometimes provides a social outlet and a welcome change of routine from studies. Availability of flexible working hours and whether or not a job is enjoyable may be factors which determine whether or not the influence of employment is perceived as positive or negative.

This study examines the effect of the way undergraduate university students use their time on their grades and their educational expectations. Data collected as part of the 1987 self study of the Faculty of Education, University of Manitoba, are used to examine the amount of time students spend in academic activities and paid employment and the effects of time use on students' educational expectations and their perceptions of their academic achievement. Two main questions are addressed: Do students' background and social psychological characteristics influence their use of time? And, how does use of time influence the educational attainment of students when their background characteristics are taken into account?

Significance of the Study

Students can use their time in activities that are either related or unrelated to their educational goals. Time spent attending classes and studying may be seen as

directly related to the achievement of educational goals. Similarly, for students in professional faculties, such as education, it may be argued that the time they spend in field experiences is related to the achievement of educational goals. Paid employment, on the other hand, represents an additional status in which students may or may not be involved. Furthermore, paid employment may be viewed as unrelated to the educational goals of students and, in fact, may represent a source of conflict for their time.

Changing economic conditions and changing values of students, challenge the importance of the delayed rewards associated with academic achievement. Therefore, it is important to understand the relationship between the time that students spend in activities which are related and unrelated to their educational goals. This study provides some insight into the ways in which students balance some of the academically related and unrelated uses of their time by providing some descriptive information about the amount of time students spend in activities that are related to educational goals and the amount of time they spend in paid employment.

The descriptive information obtained about students' time use provides a basis for the examination of the two main study questions. The first question, "do students' background and social psychological characteristics

influence their use of time?", is based upon the assumption that time use may differ among students for a variety of reasons. Do students whose fathers are employed in lower socioeconomic status jobs work more than other students? Do students who have attended University longer tend to work or study more or less than less experienced students? Are there differences between males and females in terms of the way they use their time? Is there a relationship between the number of credit hours students are taking in courses and their use of time in related and unrelated activities? Do students differ in their time use in relation to their self concepts of ability and their motivation? This study examines these issues.

This study also examines how time use influences educational attainment. More specifically, it provides information about the effects that time spent in classes, studying, student teaching and in volunteer work in schools has upon students' grades and their educational expectations. The question of whether students who spend more time in activities related to their educational goals have higher grades and higher educational expectations than students who spend less time in these activities is addressed. Furthermore, the effects that time spent in paid employment has upon students grades and educational expectations is addressed. This is significant to gaining

understanding about whether or not the amount of time students spend engaged in paid employment makes a difference in their educational attainment and to gaining understanding about multiple status involvements of students and the way time is related to role theory.

Limitations of the Study

There are three limitations of this study, in terms of the contributions it may make to understanding the importance of the way that students use their time. First, this study represents a cross sectional analysis of time use and its impact on the educational attainment of students. All variables in the study were collected at the same point in time thus limiting the causal connections between the variables. In other words, estimates of time use and academic grades were made by students at one point in time, the point at which they completed the questionnaire. A longitudinal study would allow for the observation of students' time use over a period of time, preceding the attainment of educational goals which could subsequently be measured. This would allow for the collection of different data.

Second, a relatively small sample of students is used in this study. Information on the variables to be studied were collected from a sample of 308 undergraduate students in the Faculty of Education at the University of Manitoba. It is

important to recognize that there may be factors which are unique to the undergraduate students in this faculty which may somehow influence their use of time. Moreover, the uniqueness of the sample may also affect some of the other variables in the analysis. This may limit the generalizability of this study to a broader population of post secondary students.

Third, limitations also exist in relation to the nature of the data used in this study. The data were collected as part of the 1987 Faculty of Education self study (Clifton, Jenkinson, Marshall, Roberts, & Webster, 1987). The measures of the amount of time students spend in various activities is a very small part of the questionnaire. The committee which produced the student questionnaire, did not systematically review the literature related to time use before they wrote the questions to measure these variables. A review of the literature on time use prior to data collection may have resulted in more sophisticated measures of time usage and multiple status involvement of students. Nevertheless, now that the literature has been reviewed, and reported in chapter 2, it seems evident that the time use variables are adequately measured and as a result, there is a rich source of data available that can be utilized to gain some insights into the relationships between the way students use their time and their educational attainment.

Overview of the Study

This thesis is organized into five chapters. Chapter 1 introduces the study in terms of its purposes, significance, and limitations. Concerns which have been raised about the increasing involvement of students in part time employment are described and related to the development of this study which examines the effects of undergraduate students time usage in activities related to their statuses as students and employees. The chapter concludes with an overview of the thesis.

In chapter 2, the relevant research literature is reviewed. First, role conflict and role expansion theories as they relate to role demands and time are discussed. This is followed by a review of literature on time and learning and literature on variables associated with educational attainment. A description of the theoretical model which guides the examination of the relationships between variables used in the study, concludes the chapter.

In chapter 3, the sample, the operationalization of the variables included in the model, and the procedures used to analyze the data are described. As noted previously, 308 undergraduate students in the Faculty of Education at the University of Manitoba were used in the study. The 14 variables, organized into five categories, social background, university background, social psychological,

time usage, and educational attainment used in the analysis are discussed. The structural equation modeling strategy used to analyze the data is described.

The results of the study are reported in chapter 4. Pearson product moment correlation coefficients and standardized and unstandardized multiple regression coefficients are presented for the causal model which is presented in chapter 2. In this respect, the effects of the social and university background variables, the social psychological variables, and the time usage variables on grade point averages of students and their educational expectations are presented.

Finally, in chapter 5, the thesis is summarized and the results are discussed in relation to the opposing role theories and the educational theories on time and learning described in chapter 2. Expected and unexpected findings related to students time usages are noted and practical implications of the findings are discussed. Suggestions for future research are also presented.

CHAPTER 2

Review of Literature

This study examines the time use of undergraduate university students. Time in activities related to the student status and time in paid employment are examined in relation to background, social psychological, and academic outcome variables. This chapter provides a review of literature related to the variables included in the study, and establishes the theoretical model which is to be tested. Initially a discussion of role theories related to multiple status involvements and time use is presented. The importance of time use in relation to learning is then identified and followed by a discussion of the theoretical relationships between social background, university background, and social psychological variables as they affect time use, academic achievement, and educational expectations. This model provides the basis of the analysis presented in chapter 4.

Two Perspectives on Role Demands and Time

According to Kielhofner (1985) individuals operate as open systems, setting goals, responding, and adapting to the

expectations of a variety of roles related to the statuses they hold. To realize goals, individuals attempt to integrate an optimal number of role behaviours with a balance of time and effort sufficient to perform the tasks associated with each status. The relative ease or difficulty with which individuals balance time and effort could depend upon how difficult a task is and their abilities to cope with the task of integrating roles.

The task of role integration may be a particularly onerous and important one for the typical university student (Miller, 1970). During the short time in which most individuals are university students, there are many new role demands to which they must adjust. For example, relationships with university professors may be different than the relationships they have previously had with teachers in secondary school. It may be the first time that these students are expected to take responsibility for their learning, knowing when learning is or is not taking place, and doing what is necessary to ensure adequate learning to achieve their academic goals. Besides new role demands associated with the status of student, individuals who are post secondary students are in transition between statuses and behaviours from their pasts and new statuses and behaviours that are potential in their futures. As such post secondary students are exposed to many opportunities

for choices of statuses and autonomy in decision making related to statuses and role behaviour (Coleman, 1980; Gordon, 1972)

It is recognized that post secondary students participate in role behaviours associated with as many other statuses or positions as individual students may hold, for example, employee, volunteer, friend, and family member. For each of these statuses, the role behaviours associated with them involve time commitments on the part of students. The question is, do multiple time commitments create conflicts which negatively influence goals or do multiple time commitments positively influence goal achievement through energy stimulated by activity?

Role conflict theorists often assume that time, as a finite entity, is a resource which individuals can control and manage in relation to their goals (Goode, 1960). Furthermore, it is often assumed that a state of conflict over availability of time is a normal state of affairs. In other words, taking on more role demands takes time away from other role demands presumably to the detriment of goals associated with role behaviour. This theory suggests that the more time students spend on activities associated with the goals of their statuses as students, the more positive will be the effect on their achievement as students. The theory also suggests that a state of conflict could be

expected to have a more generalized negative effect upon students' educational expectations. More specifically, students may limit their expectations in order to avoid conflict.

A different view of the availability of time to meet role demands is described by Marks (1977). He describes time as expandable in the sense that activity stimulates energy production, which results in greater efficiency in time use. According to this perspective one would expect that involvement in role demands related to multiple statuses would have a positive effect upon achievement. The stimulation of energy produced by activity would positively influence goals unless the activity was so intense that energy produced was totally consumed; at which time a negative impact upon goals would result. In other words, student achievement would be positively affected by multiple role involvement provided that involvement did not exceed the threshold of available energy. It is anticipated further that energy stimulation and achievement would have a positive influence on expectations.

Other theorists interested in the effects of involvement in multiple statuses have identified positive effects related to multiple status involvement (Thoits, 1983; Moen et al. 1989). Extrapolating from the work of Durkheim (1951) on the importance of social integration to

psychological well being, Thoits (1983) tested an identity accumulation hypothesis. The hypothesis suggests that there is a direct relationship between identity accumulation, or multiple status involvement, and psychological well-being. The results of the study support the hypothesis. More specifically, Thoits (1983) found that the greater the number of social positions or statuses held by individuals the lower the level of their psychological distress. She further interpreted this finding to mean that the more identities or statuses held by individuals the more positive was their psychological well-being, and their functional behaviour. The concept of the positive effects of identity accumulation is further supported by Moen et al. (1989), who tested the effects of multiple status involvement on duration of life for a sample of women. They found that the greater the number of statuses held by individuals the longer they lived. Furthermore, they found that statuses which were engaged in on a voluntary basis were more positively related to duration of life than those that were obligatory.

The present study examines whether or not students focus their time on an employment status as well as their status as students. Furthermore, this study tests these opposing role theories, role conflict and role expansion, by examining the effects of involvement in paid employment on

grade point average and educational expectations, both assumed to be goals common to all students.

Previous literature about the effects of student employment present little consistent information on the effects of time spent in employment on educational performance and attainment. Radwanski (1987) studied the problem of high school drop out in Ontario. He concluded that an extensive amount of time spent in employment, which he described as being more than 15 hours per week, is a contributing factor in high school dropout. Wagstaff and Mahmoudi (1976) studied the effects of employment on the performance of a sample of college students. They found a negative relationship between employment, measured as estimated hours worked per week, and grade point average. Their study also related hours per week worked to hours per week spent studying. No significant relationship was found, suggesting that hours spent working did not seem to detract from the hours the students spent studying.

Others reporting a negative relationship between time spent employed and achievement recognize 12 to 15 hours per week to represent the point at which the influence of hours spent in employment becomes negative. D'Amico (1984) found that extensive involvement in employment, in excess of 15 to 20 hours per week, is associated with decreased study time, decreased free time at school, and increased rates of

dropping out of school. His study involved data from a national longitudinal study of youth in the United States and included data on students from grade 9 through grade 12. Hammes and Haller (1983) report on college students strategies for coping with part time jobs. Their study identifies a number of time management techniques that the students used to effectively deal with time demands. They report 20 hours of employment per week to be the threshold for adverse effects upon academic performance.

In contrast to the negative influence of working on academic performance, there is also support for a positive influence. Both Radwanski (1987) and D'Amico (1984) found positive effects when the number of hours that high school students worked was less than 15 to 20 hours per week. D'Amico attributes this positive relationship to a congruence hypothesis proposed by Bowles and Gintis (1976). That is, their hypothesis suggests that employers and teachers value the same characteristics and that involvement in each of these statuses, student and employee, is reinforcing the role expectations and goals of the other.

A third perspective on the relationship between employment and academic performance is represented in two studies of college students which indicate no significant relationship between hours worked and grade point average. Metzner and Bean (1987) conducted a study of the attrition

of a sample of university students in the United States. Their causal model examined the relationship between hours spent employed per week and grade point average. No significant relationship was found between these two variables when such variables as hours enrolled, age, gender, and high school performance, among others, were controlled. Van-de-Water and Augenblick (1987) conducted a study to identify the impact of working on the academic performance and persistence of a sample of full-time college students. They found no significant relationship between hours worked and grade point average, or between hours worked and credit hours attempted. Working students did, however, take longer, on average, to complete their degrees.

In addition to examining the effects of hours spent in paid employment on academic attainment, this study also examines academically related time use and its relationship to educational attainment. The next section of this review considers this relationship.

Time Usage and Educational Attainment

From a theoretical perspective, there are two main areas of study relating time and learning (Daniels & Haller, 1981). Studies examining exposure time in school and studies examining time engaged in learning activities have both established that there is a positive relationship

between time spent engaged in learning and the achievement of students. Each of these areas of study is discussed and their relevance to this study established.

Studies of schooling in the United States by Coleman et al. (1966) and Jencks et al. (1972) present findings which suggest that the amount of time spent in school has little effect upon learning. Wiley and Harnischfeger (1974) seem to contradict this argument and show how these earlier studies failed to measure exposure to schooling. They suggest that measures of time related to learning be incorporated into theoretical models attempting to explain achievement.

More recent studies have examined the effects of exposure time in school. These studies have established that, in general, the more time that students spend in school the better is their academic achievement. Heyns (1978) examined the effects of exposure time by comparing cognitive growth following a period of schooling with growth following a period of no schooling during the summer months. Her results indicated that cognitive growth, as measured by a standardized achievement test, was positively related to the amount of time students spent in school. Goodlad (1984), in his study of a large sample of schools in the United States, makes numerous references to the importance of the amount of time that students spend in school on their

academic achievement. For example, he shows that students in states which have longer school years achieve higher scores on standardized achievement tests than students who attend school in states which have fewer hours of schooling per year.

Although these studies concern students who are enrolled in primary and secondary schools, the assumption is made that the relationship between time that students are involved in learning and their achievement is also true for students in post secondary institutions. That is, it is assumed that taking more credit hours has a positive effect upon learning perhaps because learning and problem solving required for different courses are similar and result in a cumulative learning effect. From this assumption it is anticipated that students participating in more credit hours of courses would have better overall performance than those participating in fewer credit hours.

The main focus of this study, however, is to examine the effects of the time which students can control in learning activities and other activities on achievement and educational expectations. Educational theory which examines the effects of time engaged in learning activities is reviewed in the next section and provides a background for this study of post secondary students time usage as it relates to educational attainment.

Carroll (1963) proposes a model of learning focused on time as a key element for understanding differences in learning outcomes. His model basically states that learning is a function of the time spent learning divided by the time needed to learn. He further argues that time needed to learn is dependent upon students aptitudes and abilities to understand as well as the quality of their instruction. Time spent learning is depicted as dependent upon the time available for learning and student perseverance.

The concept of mastery learning arose from Carroll's (1963) work. In mastery learning, it is assumed that the majority of students can achieve to a defined mastery level (Bloom, 1974). Individualized instruction and learning time adjustments, can, unless ability is significantly compromised, result in the achievement of mastery, or learning to a fixed criterion, for the majority of students. The individualized focus of the acceleration model makes it a relevant conceptual model for consideration of post secondary students time use and learning. This is so because time spent learning for these students is individualized by the choices students make about the learning process. For example, post secondary students make independent decisions about numbers of class hours in which they enroll, their attendance in classes, and the amount of time they spend studying. These time variables

relate to student perseverance and, therefore, according to Carroll's (1963) model, can be expected to affect academic achievement.

Many education studies identify a positive correlation between time on task and achievement (Bloom, 1974; Karweit, 1984; Karweit & Slavin, 1982; Strother, 1984), although the significance of amounts of time spent on task and the definition of on task time are not well established (Carroll, 1970; Karweit, 1984; Karweit & Slavin, 1982; Strother, 1984). Most literature which addresses the issue of defining time on task is focused on teacher directed in class time at the primary school level. Some literature exists which is related to student directed time use at secondary and post secondary levels. These studies use class hours and study time or time spent on homework to identify time engaged in learning activities.

Time spent in class can also be considered a measure of time on task for post secondary students, as students at this level generally have greater discretion on whether or not to attend classes. A study by Polachek, Knieser, and Harwood (1978), for example, examined the effects of time spent in class on academic achievement for a sample of undergraduate students in economics. Their results indicate that time spent attending classes has a positive effect upon academic achievement. Metzner and Bean (1987), in a study

of undergraduate student attrition, provide further support to the findings of Polachek et al. (1978). Specifically, they show a significant negative relationship between absenteeism and grade point average.

Walberg, Paschal, and Weinstein (1985) comment on the effects of homework on learning. They suggest that the amount of time spent on learning, measured as time spent doing homework, is a significant factor affecting the achievement of elementary and secondary school students. Several studies support the positive relationship between time spent on homework and achievement. Paschal, Weinstein, & Walberg (1984) report on their examination of 15 published and unpublished studies of the effects of homework on learning. This study substantiates that there is a positive relationship between hours spent doing homework and achievement.

These findings are also supported by two studies based on data from a major longitudinal study, High School and Beyond (HSB), which was conducted by the National Center for Educational Statistics in the United States. Keith (1982, p.249) analyzed HSB data and concluded that study time, measured by the question, "Approximately what is the average amount of time you spend on homework in a week?" contributes significantly to student grades. Furthermore, he found that grades and homework time have a linear relationship for

students regardless of their level of ability. This finding is important for this study, because it lends support to the assumption that the relationship between study time and achievement holds for post secondary students.

In 1986, Keith, Reimers, Fehrmann, Pottbaum, and Aubey conducted a path analysis study on data from the HSB study taking into account the effects of homework time, time spent watching television, as well as several background variables upon academic achievement. The results of this study are similar to the results of Keith's (1982) previous study in that time spent on homework is second only to ability in its effect upon academic achievement.

The effects of time use on learning at the post secondary level have been considered by several researchers in terms of the amount of time spent studying. In Miller's (1970) review of research related to success in higher education, a positive relationship between study time and performance is recognized as having been established. Wagstaff and Mahmoudi (1976) and Polacheck et al. (1978) conducted quantitative studies on post secondary students that further substantiate Miller's (1970) review. Wagstaff and Mahmoudi (1976) report a significant relationship between self reported hours per week spent studying and achievement, defined as grade point averages reported on student transcripts. Polachek et al. (1978) conducted a

survey of undergraduate students at the University of North Carolina in which similar results were found. Each of these studies provide evidence for a positive relationship between study time and achievement.

Literature reviewed in this section supports the expectation of a positive relationship between learning activities, such as those represented by the variables time spent in class and time spent studying, and academic achievement. The next two sections of this review consider social psychological and background characteristics of students that may be partially responsible for differences in students' time use.

Social Psychological Variables

In the previous section time use in relation to learning was examined. However, decisions that individuals make about their time use may be influenced by a wide variety of variables. This section considers two social psychological variables which may be influential to time use behaviours. These variables are self concept of ability and motivation. Each of these variables have been found to be significant predictors of achievement and educational expectations. In 1972, Gordon reported the results of a path analysis study of factors influencing the life aspirations of adolescents. His study included several self concept variables including academic self concept. All self concept

variables were found to relate positively to levels of aspiration such as expected level of education and expected type of occupation. In fact, academic self concept was the variable which was most highly and, positively, related to aspirations.

According to Brookover and Erickson (1975), individuals with similar abilities but different self concepts of abilities do not generally achieve to the same level nor do they have similar levels of educational expectation. Students with more positive self concepts of abilities generally have higher achievement and higher levels of aspiration than students with less positive self concepts. In support of the predictive nature of self concept of ability to achievement, Brookover and Erickson (1975) reported the findings of a longitudinal study which followed fifteen hundred students from junior high school through three years of high school. The findings of this study indicate that changes in self concept of ability are followed by changes in achievement.

Others have come to similar conclusions about the importance of self concept as a factor intervening between students background characteristics and academic outcomes. Porter, Porter, and Blishen (1982) examined a number of variables that influenced the educational aspirations of Ontario high school students. Their findings indicate a

positive relationship between self concept of ability and academic performance and between self concept of ability and educational expectations. Clifton and Roberts' (1988) study of Inuit and non-Inuit students in northern Canada found self concept of ability to be a significant intervening variable which explained much of the variation in achievement related to background variables of ethnicity and socioeconomic status. Reitzes and Mutran (1980) found that several self concept factors intervened between background variables, such as sex and father's education, in explaining differences in achievement and educational expectations of a sample of university students in the United States.

Heckhausen (1967) cites many studies indicating a positive relationship between motivation and achievement in college. He further indicates that the relationship is stronger for those with higher aptitude scores. A study by Marjoribanks (1976) examined the importance of motivation to the achievement of a sample of 12 year olds. The findings of this study indicate that positive attitudes toward school, school work, and doing well, correlated positively with achievement. These findings held for students at all levels of ability and were of similar magnitude for both males and females. Miller (1970) reported that motivation is a significant factor for completion and success in higher education.

In essence, this literature on these social psychological variables indicates that both motivation and self concept of ability influence academic achievement and educational expectations. A number of studies support the argument that these variables are intervening between the background characteristics of students and educational outcomes such as achievement and educational expectations. The next section reviews literature related to social and university background variables and their influence on educational outcomes.

Social and University Background Variables

Socioeconomic status and personal characteristics of students have been shown to be related to students' levels of performance and educational expectations. As well, university background variables which are included in this study are considered.

Socioeconomic status, measured by parental occupation, family income, level of education of parents, or combinations of these indicators are considered highly predictive indicators of educational outcomes in Western society (Boocock, 1980). The general findings are that lower socioeconomic status and lower levels of parental education predict lower educational performance. However, according to Miller (1970) and Porter et al. (1982) these background characteristics have a smaller influence for

university students than for high school students, probably because the social class variation within universities is less than the spread within high schools (Miller, 1970). In other words, socioeconomic status factors probably influence participation in higher education (Brookover & Erickson, 1975), but students who are participating in higher education are probably more homogeneous with respect to socioeconomic factors than students in high school.

Reitzes and Mutran's (1980) study of university students indicates weak positive relationships between socioeconomic factors, father's education, and family income, and the students' achievement and educational expectations. The relationship is weakest for educational expectations, and, for both outcomes, much of the variation is shown to be explained by one intervening variable, self concept of ability.

In the past, gender has also been shown to influence achievement and educational attainment. Generally, it has been shown that females achieve better than males in early school years. This differential in achievement diminishes in high school, and, generally, females have lower educational expectations and lower levels of actual attainment at the post secondary level (Porter et al., 1982). However, these trends are believed to be changing in response to the concern for equality of opportunity for

females and it is expected that statistics will soon begin to reveal different trends (Boocock, 1980).

In this respect, Reitzes and Mutran's (1980) findings indicate that, for their sample of university undergraduates, gender does not directly influence academic performance and educational plans when other variables such as praise and self concept are controlled. Similarly, in Metzner and Bean's (1987) study of undergraduate attrition, neither grade point averages nor attrition are found to be significantly related to gender.

It has been reported that in post secondary education younger students generally achieve higher grades than older students (Miller, 1970). Nevertheless, a more recent study of university students by Metzner and Bean (1987) included age as well as grade point average. Their results indicated that older students achieve higher grade point averages than younger students. Kasworm (1980) concurs with the finding of a positive relationship between age and achievement.

Two university background variables, years of university and number of credit hours are included in this study. It seems logical to anticipate that students with more experience at university might do better than those with less experience, although no empirical evidence was found to support this view.

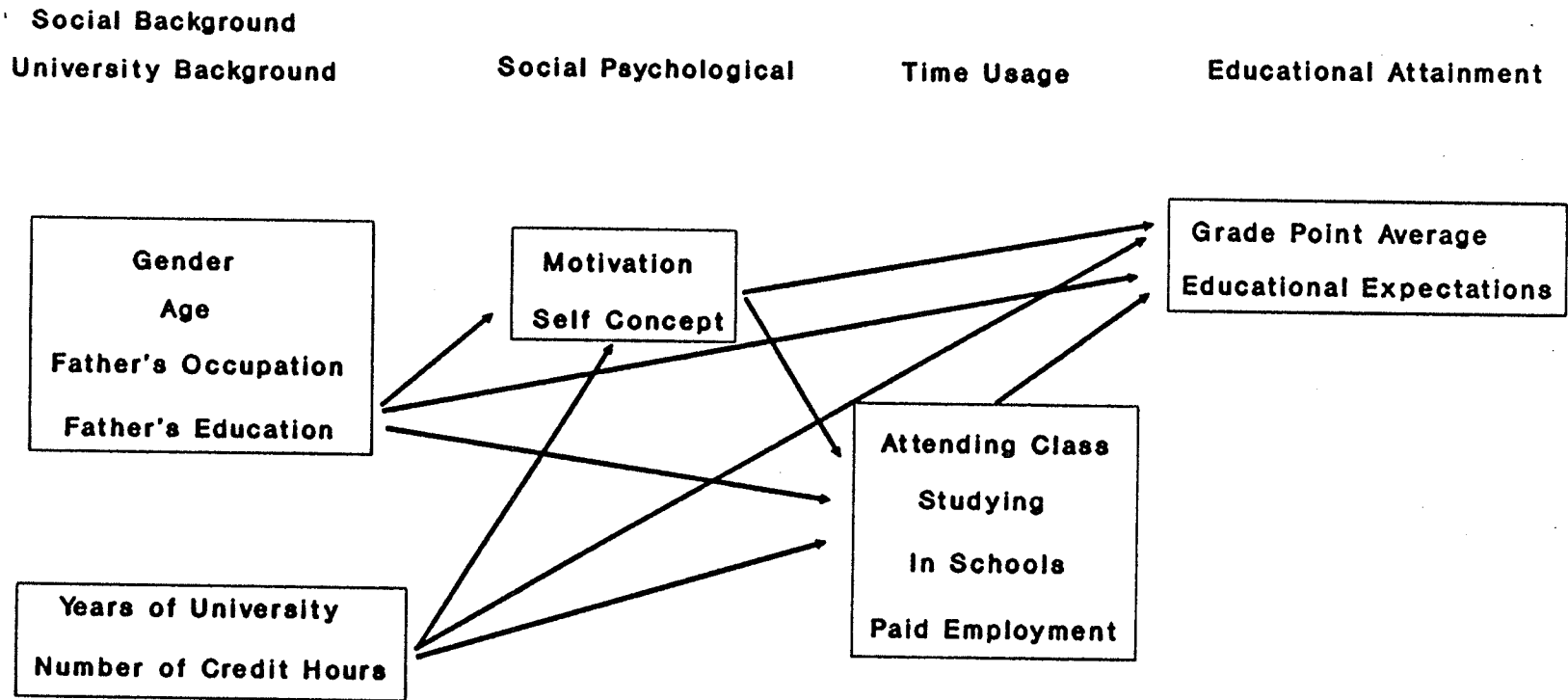
Metzner and Bean (1987) find no significant relationship between the number of hours in which university students enroll and their grade point averages. However, their study shows that students enrolled in low numbers of credit hours have a greater tendency to drop out of college than students enrolled in greater numbers of credit hours. By extrapolating from this finding, it is anticipated that the number of hours in which students are enrolled will have an effect on educational expectations. It is expected that students enrolled in more credit hours will have higher educational expectations than students enrolled in fewer credit hours.

The Theoretical Model

The theoretical model in this study examines undergraduate education students use of time in relation to achievement and educational expectations. It is anticipated that time use explains some of the variance in students' achievement and expected levels of education. As shown in the review of the literature, other variables also contribute to explaining variance in educational outcomes. Specifically, it has been argued that social and university background variables and social psychological variables affect time use, achievement, and educational expectations.

The model examined in this study is illustrated in Figure 1. As seen, the social psychological variables (self

Figure 1
The Theoretical Model



concept of ability and motivation) are interpreted as being intervening variables between the social background variables (gender, age, father's education, father's occupation), the university background variables (years of university and number of credit hours), and the time usage variables (attending class, studying, time in schools, and paid employment) and the educational attainment variables (grade point average and educational expectations). The literature previously reviewed supports a model which places the social psychological variables as intervening between the social and university background variables and the educational attainment. It is further anticipated that social and university background and social psychological variables influence decisions about time use. Therefore, in order to gain a better understanding of the effects of time use on educational attainment, the model allows for the control of these social and university background and social psychological variables.

As illustrated in the model, time use variables considered in this study include time spent per week in attending class, studying, volunteering in schools or student teaching in schools, and being employed. Based on the literature, it is anticipated that time spent attending classes and studying have a positive effect on grade point averages and educational expectations. Similarly, time in

schools is anticipated to have a positive effect because the activities of volunteering and student teaching are related to the academic goals of education students.

The literature on involvement in multiple statuses and literature on the effects of student employment indicate that hours of employment has either no effect or a positive effect on achievement, specifically if hours of employment are below a threshold of 15 to 20 hours per week. However, if the hours of employment are beyond this threshold, they are anticipated to have a negative effect upon the educational attainment variables. The next section describes the methodology used to test the theoretical model.

CHAPTER 3

Methodology

This chapter describes the sample of students, the operationalization of the variables, and the procedures used to analyze the data. The sample is from a study of education students at the University of Manitoba. As noted in chapter 2, the variables considered are social background variables (gender, age, father's occupation, and father's education), university background variables (years of university education and number of credit hours), social psychological variables (motivation and self concept of ability), time usage variables (attending class, studying, student teaching and volunteer work in schools, and paid employment), and educational attainment variables (grades and educational expectations).

The Sample

In 1987 the Faculty of Education, University of Manitoba, conducted a study of its students and its programs. As part of that study, a sub-committee collected data on undergraduate and graduate students in the faculty (see Clifton et al., 1987).

At the time the self study data were collected, there were 1467 undergraduate students and 1381 graduate students in the Faculty of Education. Questionnaires were administered to a sample of students representing 21% of undergraduates and 18% of graduate students. Three hundred and eight, 76%, of undergraduate students who received questionnaires responded and 245, 49%, of graduate students who received questionnaires responded. This study uses data from the undergraduate students who were surveyed. Only undergraduates are used because there are important differences between the two groups. For example, only 9.8% of graduate students were enrolled in 15 or more credit hours of course work. In contrast, only 9.9% of undergraduates were enrolled in 18 or less credit hours of course work. This indicates that the groups differ significantly in their time use as expressed in terms of numbers of credit hours in which they were enrolled. Moreover, the great majority of graduate students appear to be employed full time and were part time students, whereas the great majority of undergraduate students appear to be full time students who were employed part time.

The sample of undergraduate students who received self study questionnaires were selected from the total population of students enrolled in the Bachelor of Education (B.Ed.) and Bachelor of Education, After Degree (B.Ed./A.D.)

programs. Students enrolled in the B.Ed. program enroll for a four year program subsequent to high school graduation. Students enrolled in the B.Ed./A.D. program enroll for two years in the faculty of education subsequent to a first degree.

A stratified random cluster sampling procedure (Gay, 1981) was used to select students to receive questionnaires. Specifically, the procedure involved randomly selecting classes of students from all of the courses that students are required to take within each year of the undergraduate B.Ed. and B.Ed./A.D. programs. The random selection of classes identified a sample representing approximately 27% of the population of students within each academic year. The Dean of the Faculty of Education notified the 13 instructors of the 19 classes selected and arrangements were made for questionnaires to be distributed and completed during class time.

The sample of undergraduate students surveyed included 397 of the 1467 students registered as undergraduates in the Faculty of Education in February, 1987. Of those surveyed, 308 responded. The majority of non-respondents were absent from the classroom when questionnaires were distributed. A very small number of students chose not to respond to the questionnaire. Nevertheless, the response rate represents approximately 76% of those surveyed. This rate is within

the range of normal return rates for research using questionnaires (Borg & Gall, 1983).

Approximately 35% of respondents are male and 65% are female. This gender distribution is very similar to the population of undergraduate students in the Faculty of Education in the academic year of 1986-1987. According to statistics reported by the Office of Institutional Analysis (1987) of the University of Manitoba, undergraduate students in the Faculty of Education were approximately 27% male and 73% female. In comparison with the total full-time undergraduate population of the university, females are substantially over represented in the Faculty of Education. More specifically, for the university, the full-time undergraduate students were approximately 53% male and 47% female in the academic year of 1986-1987.

Approximately 46% of respondents are between the ages of 21 and 25. For both males and females, the majority of respondents have 4 years of previous university education. However, approximately 34% of the sample report one or two years of previous education. The majority of those with one or two years of university are female. In contrast, the majority of students with more than four years of previous university education are male. Similarly, there are age differences for male and female respondents. For both males and females the largest percentage of respondents are

between the ages of 21 and 25, however, the second largest percentage of males are between 26 and 30 in contrast to the second largest percentage of females who are between 18 and 20.

The Variables

As indicated in the theoretical model presented in chapter 2, this study uses fourteen variables, four social background variables, two university background variables, two social psychological variables, four time usage variables, and two educational attainment variables. Descriptive statistics for all variables in the model are presented. Data for all these variables are included in Part III of the questionnaire (see Clifton et al., 1987).

Social Background Variables

Two background variables related to personal characteristics of students and two background variables related to students' socioeconomic backgrounds are included in this study and collectively referred to as social background variables. The variables related to personal characteristics of students are gender and age. The variables related to students' socioeconomic backgrounds are father's occupation, and father's education. Socioeconomic background data were available for both mothers and fathers, however, the high correlations between the educational and occupational levels of spouses (.540 and

.356 respectively) make it appropriate to use data on one parent only. Data on fathers were selected because their educational and occupational levels were, in general, higher than those of students' mothers in these data (see Clifton et al., 1987). A description of each of the social background variables follows.

Gender. In question 15 of Part III of the questionnaire respondents were asked to indicate whether they were males or females. Males were coded as "1" and females were coded as "2". Table 1 indicates frequencies and percentages for gender. One respondent failed to specify his or her gender.

Completed questionnaires were received from 107 males, 35% of the sample, and 200 females, 65% of the sample. Table 2 indicates descriptive statistics for gender. The mean is 1.651 with a standard deviation of 0.477 and the variable is reasonably normally distributed.

Age. In question 16 of Part III of the questionnaire respondents were asked to respond to the question "How old are you?". Table 3 shows frequencies and percentages for the students' ages. The data are recoded to normalize the distribution of responses. Specifically, age 29 on Table 3 represents respondents aged 29 and 30. Similarly, age 31 represents respondents aged 31, 32, and 33; age 34

Table 1

Frequencies and Percentages for Gender

<u>Code</u>	<u>Gender</u>	<u>Frequency</u>	<u>Percentage</u>
1	Males	107	34.9
2	Females	200	65.1
	Total	307	100.0

Table 2

Descriptive Statistics for Gender

Mean	1.651	Standard Deviation	0.477
Mode	2.000	Median	2.000
Kurtosis	-1.602	Skewness	-0.639

Table 3

Frequencies and Percentages for Age

<u>Age</u>	<u>Frequency</u>	<u>Percentage</u>
18	19	6.4
19	24	8.1
20	28	9.5
21	38	12.8
22	39	13.2
23	24	8.1
24	19	6.4
25	16	5.4
26	6	2.0
27	12	4.1
28	15	5.1
29,30	16	5.4
31,32,33	15	5.1
34,35,36,37	17	5.7
38-47	8	2.7
Total	296	100.0

Table 4

Descriptive Statistics for Age

Mean	24.098	Standard Deviation	4.886
Mode	22.000	Median	22.500
Kurtosis	0.397	Skewness	1.028

represents respondents aged 34, 35, 36, and 37; and age 38 represents respondents aged 38 to 47. All but 12 (3.9%), of the completed questionnaires provided data on age.

Ages of respondents ranged from 18 to 47 with approximately 72% of respondents between the ages of 20 and 30. Slightly over 14% of respondents are less than 20 years old, and approximately 13.5 % are between 30 and 47. Table 4 shows descriptive statistics for data collected on age of students. The mean age is 24.098 with a standard deviation of 4.886 and the variable is reasonably normally distributed.

Father's occupation. Question 19 of Part III of the questionnaire asks respondents to indicate their parents' occupations by selecting from a list of 15 occupational categories ranging from farm laborers, coded "1", to self-employed professionals, coded "15". Table 5 illustrates the complete list of occupational categories and frequencies and percentages of respondents with fathers in each category. Data are recoded to normalize the distribution so that code 5 includes codes 2, 3, and 4, and, therefore, represents responses in all the unskilled and semiskilled occupational categories. Code 12 includes code 11, thereby combining responses in the technician and semi professional categories. Data are missing for this variable from 19 of the completed questionnaires.

Table 5

Frequencies and Percentages for Father's Occupation

<u>Code</u>	<u>Occupation</u>	<u>Frequency</u>	<u>Percentage</u>
5	Unskilled manual Unskilled clerical, sales and service Semi skilled manual Semi skilled clerical, sales and service	35	12.1
6	Farmers	36	12.5
7	Skilled crafts and trades	41	14.2
8	Skilled clerical, sales and service	16	5.5
9	Supervisors, foremen/women	20	6.9
10	Middle managers	25	8.7
12	Technicians Semi professionals	18	6.2
13	High level managers	21	7.3
14	Employed professionals	60	20.8
15	Self employed professionals	17	5.9
	Total	289	100.0

Table 6

Descriptive Statistics for Father's Occupation

Mean	9.696	Standard Deviation	3.471
Mode	14.000	Median	9.000
Kurtosis	-1.501	Skewness	0.150

These university students have fathers in a wide range of occupational categories. Roughly 44% of respondents' fathers are reported to be in unskilled, semiskilled, or skilled occupations. The remaining 56% have fathers in occupations ranging from supervisors to self employed professionals, with a large proportion of students (26.7%) indicating that their fathers work as employed or self employed professionals. Table 6 presents the descriptive statistics for data collected about fathers' occupations. The mean is 9.696 with a standard deviation of 3.471 and the variable is reasonably normally distributed.

Father's education. Question 18 of Part III of the questionnaire asks respondents to select, from a list of nine possible levels, the highest educational level received by each of their parents. Responses are coded in ascending order. Data are missing for 8 respondents. Table 7 illustrates the frequencies and percentages for each category of father's education.

For 56.7% of respondents, the highest level of education received by their fathers was high school completion or less. Of fathers who participated in post secondary education, 23.3% have completed a bachelors degree or higher. Descriptive statistics for these data are reported in Table 8. The mean is 3.813 with a standard deviation of 2.531 and the variable is reasonably normally distributed.

Table 7

Frequencies and Percentages for Father's Education

<u>Code</u>	<u>Level of Education</u>	<u>Frequency</u>	<u>Percentage</u>
1	Elementary school	50	16.7
2	Some high school	84	28.0
3	Completed high school	36	12.0
4	Some technical, vocational training	37	12.3
5	Completed community college	11	3.7
6	Some university	12	4.0
7	Completed a Bachelors degree	39	13.0
8	Some education at graduate level	9	3.0
9	Completed graduate degree	22	7.3
Total		300	100.0

Table 8

Descriptive Statistics for Father's Education

Mean	3.813	Standard Deviation	2.531
Mode	2.000	Median	3.000
Kurtosis	-0.781	Skewness	0.727

University Background Variables

Two university background variables are included in this study. They are previous years of university education and number of credit hours in which students are enrolled. A description of each follows.

Years of university education. The number of years of university education of respondents was requested in question 8 of Part III of the questionnaire. Respondents were asked "How many years of university education do you have? If you have been a part-time student, then estimate the number of equivalent full-time years". Table 9 shows frequencies and percentages for this variable. Data are missing from 7 of the returned questionnaires.

Students reported previous education at university level of from 1 to 6 years. The greatest number of respondents, approximately 24%, have 4 years university education; approximately 52% have less than 4 years; and approximately 24% have more than 4 years at university. Table 10 shows descriptive statistics for this variable. The mean is 3.326 with a standard deviation of 1.562 and the variable is reasonably normally distributed.

Credit hours. The academic load of students was determined in question 3 of Part III of the questionnaire by asking respondents to indicate the number of credit hours of university work being undertaken during the academic year,

Table 9

Frequencies and Percentages for Years of Education

<u>Years of Education</u>	<u>Frequency</u>	<u>Percentage</u>
1	48	15.9
2	54	17.9
3	55	18.3
4	71	23.6
5	42	14.0
6	31	10.3
Total	301	100.0

Table 10

Descriptive Statistics for Years of Education

Mean	3.326	Standard Deviation	1.562
Mode	4.000	Median	3.000
Kurtosis	-1.030	Skewness	0.071

which was defined as being from September to April. Table 11 presents frequencies and percentages for data collected on credit hours. Data are recoded to normalize the distribution for statistical purposes. Recoding collapses responses of 0 and 6 credit hours into the response 9 credit hours. Similarly, the reported response 27 credit hours includes the response 26 credit hours, the reported response 30 credit hours includes the response 29 credit hours, the reported response 33 credit hours includes the responses 31 and 34 credit hours, and the reported response 39 credit hours includes the responses 40, 45, 48, and 60 credit hours. Data are missing for 14 respondents.

It is noted that approximately 92% of respondents report taking 18 or more credit hours of study and that by far the largest number of students are taking 30 credit hours. Table 12 presents descriptive statistics for data collected on credit hours. The mean is 27.122 with a standard deviation of 6.235 and the variable is reasonably normally distributed.

Social Psychological Variables

Two social psychological variables are considered in this study. They are motivation and self concept of ability. A description of each follows.

Motivation. Students indicated their level of motivation to do well in university in responding to

Table 11

Frequencies and Percentages for Credit Hours

<u>Number of Credit Hours</u>	<u>Frequency</u>	<u>Percentage</u>
0,6,9	13	4.4
12	5	1.7
15	6	2.0
18	7	2.4
21	9	3.1
24	52	17.7
26,27	39	13.3
29,30	120	40.8
31,33,34	26	8.8
36	10	3.4
39,40,45,48,60	7	2.4
Total	294	100.0

Table 12

Descriptive Statistics for Credit Hours

Mean	27.122	Standard Deviation	6.235
Mode	30.000	Median	30.000
Kurtosis	1.810	Skewness	-1.240

question 14 of Part III of the questionnaire. The question presented respondents with a five point scale with unmotivated at one end and very motivated at the other end. Respondents were asked to "Please check how motivated you are to do well in your courses this year." Responses are coded in ascending order from "1" at the unmotivated end of the scale to "5" at the very motivated end. Table 13 shows frequencies and percentages for level of motivation. Data on this variable are missing from 3 students.

The most frequently reported points on the five point response scale are 4 and 5, indicating that 58% of the students consider themselves to be highly motivated to do well in their courses. Approximately 25% of those responding selected the first two categories at the unmotivated end of the scale, while the remainder of respondents to this question selected the mid point on the scale. Table 14 shows descriptive statistics for this variable. The mean is 3.495 with a standard deviation of 1.238 and the variable is reasonably normally distributed.

Self concept of ability. Students were asked "How good are you at your university work compared to other students in your year level?" in Question 10 of Part III of the questionnaire. Students responded to this question by checking off one of five choices ranging from "a lot above average" to "a lot below average". Responses are coded with

Table 13

Frequencies and Percentages for Motivation

<u>Level of Motivation</u>	<u>Frequency</u>	<u>Percentage</u>
unmotivated 1	23	7.5
2	53	17.4
3	52	17.0
4	104	34.1
very motivated 5	73	23.9
Total	305	100.0

Table 14

Descriptive Statistics for Motivation

Mean	3.495	Standard Deviation	1.238
Mode	4.000	Median	4.000
Kurtosis	-0.833	Skewness	-0.486

a value "1" indicating a response of a lot below average; "2" indicating a little below average; "3" indicating about average; "4" indicating a little above average; and "5" indicating a lot above average. Table 15 presents frequencies and percentages for data collected on self concept of ability. In order to normalize the distribution, data are recoded so that the responses "a lot below average", and "a little below average" were collapsed into code 2. Two respondents did not answer this question.

These data indicate that 86.2% of the students consider their work to be about average or a little above average in comparison with other students in their year level. Table 16 presents the descriptive statistics for the recoded data. The mean is 3.667 with a standard deviation of 0.706 and the variable is reasonably normally distributed.

Time Usage Variables

Four variables were collected on the way in which students use their time. These variables are time spent in attending classes, time spent in studying, time spent in student teaching and volunteering in schools, and time spent in paid employment. Data on these four variables were collected in question 13 of Part III of the questionnaire. Respondents were asked to estimate the number of hours spent in each of these activities during a typical week. A description of each variable follows.

Table 15

Frequencies and Percentages for Self Concept of Ability

<u>Code</u>	<u>Self Concept of Ability</u>	<u>Frequency</u>	<u>Percentage</u>
2	A lot below average A little below average	9	2.9
3	About average	117	38.2
4	A little above average	147	48.0
5	A lot above average	33	10.8
Total		306	100.0

Table 16

Descriptive Statistics for Self Concept of Ability

Mean	3.667	Standard Deviation	0.706
Mode	4.000	Median	4.000
Kurtosis	-0.355	Skewness	0.069

Attending class. Table 17 indicates frequencies and percentages for data collected on hours spent each week attending classes. Data are recoded so that class hours are collapsed into six categories. The category coded 0 represents no hours per week spent in class, code 5 represents 1 to 5 hours per week, code 10 represents 6 to 10 hours per week, code 15 represents 11 to 15 hours per week, code 20 represents 16 to 20 hours per week, and code 25 represents more than 20 hours per week spent in class. Recoding was done to normalize the distribution of data. Data on this variable are missing for 8 respondents.

Students report a range of from 1 to 48 hours per week in class time. Most students report spending 15 hours per week in class. Twenty five percent spend from 0 to 10 hours, and 37% spend more than 15 hours per week in class. Table 18 presents descriptive statistics for hours per week spent attending class. The mean is 15.750 with a standard deviation of 5.609 and the variable is reasonably normally distributed.

Studying. Table 19 displays frequencies and percentages for data collected on hours spent each week studying. In a manner similar to that carried out with other time usage variables, data for hours spent studying are recoded to normalize the distribution. As a result of this procedure, the category coded 0 represents responses of

Table 17

Frequencies and Percentages for Time Spent Attending Classes

<u>Code</u>	<u>Class Hours Per Week</u>	<u>Frequency</u>	<u>Percentage</u>
0	0	7	2.3
5	1-5	12	4.0
10	6-10	56	18.7
15	11-15	114	38.0
20	16-20	76	25.3
25	21-48	35	11.7
Total		300	100.0

Table 18

Descriptive Statistics for Time Spent Attending Classes

Mean	15.750	Standard Deviation	5.609
Mode	15.000	Median	15.000
Kurtosis	0.188	Skewness	-0.370

Table 19

Frequencies and Percentages for Time Spent Studying

<u>Code</u>	<u>Study Hours Per Week</u>	<u>Frequency</u>	<u>Percentage</u>
0	0	8	2.7
5	1-5	52	17.6
10	6-10	85	28.7
15	11-15	56	18.9
20	16-20	46	15.5
25	21-48	49	16.6
Total		296	100.0

Table 20

Descriptive Statistics for Time Spent Studying

Mean	13.834	Standard Deviation	7.077
Mode	10.000	Median	15.000
Kurtosis	-1.022	Skewness	0.166

0 hours per week spent studying, code 5 represents 1 to 5 hours per week, code 10 represents 6 to 10 hours per week, code 15 represents 11 to 15 hours per week, code 20 represents 16 to 20 hours per week, and code 25 represents responses of greater than 20 hours per week. Data are missing from 12 students for this variable.

Review of this data indicates that students spend anywhere from 0 to 48 hours per week studying. Most students report studying for 6 to 10 hours per week. Table 20 displays descriptive statistics for this variable. The mean hours spent studying are 13.834 with a standard deviation of 7.077. The variable is reasonably normally distributed.

In schools. Table 21 presents frequencies and percentages for data collected on hours spent each week in student teaching and volunteer time spent in schools. To normalize the distribution of the data, these data are recoded so that hours in schools above 0 are collapsed into three categories. The category coded 5 represents responses of 1 to 5 hours in schools per week, code 10 represents 6 to 10 hours per week, and code 15 represents all responses greater than 10 hours per week. Eight of the returned questionnaires had missing data for this variable.

Roughly one third of students are not involved in student teaching or voluntary work, another one third are

Table 21

Frequencies and Percentages for Time in Schools

<u>Code</u>	<u>Hours per week</u>	<u>Frequency</u>	<u>Percentage</u>
0	0	104	34.7
5	1-5	109	36.3
10	6-10	67	22.3
15	11-40	20	6.7
Total		300	100.0

Table 22

Descriptive Statistics for Time in Schools

Mean	5.050	Standard Deviation	4.581
Mode	5.000	Median	5.000
Kurtosis	-0.675	Skewness	0.506

involved in the schools for from 1 to 5 hours per week. Of the remaining one third 67 students report 6 to 10 hours per week of involvement and 20 students report involvement of from 11 to 40 hours. Table 22 presents descriptive statistics for hours spent in schools. The mean is 5.050 with a standard deviation of 4.581 and the variable is reasonably normally distributed.

Paid employment. Table 23 displays the frequencies and percentages for data collected on hours spent each week in paid employment. These data are recoded into 5 groups resulting in a statistically acceptable distribution of frequencies. Code 5 represents employed hours per week of 1 to 5, code 10 represents 6 to 10 hours, code 15 represents 11 to 15 hours, code 20 represents 16 to 20 hours and code 25 represents in excess of 20 hours per week. Data are missing for 8 respondents.

Approximately one half of the students report that they spend no time in paid employment. Roughly 30% report employment hours of 1 to 15 hours per week, and roughly 10% work 16 to 20 hours, and 8% work in excess of 20 hours in a week. This compares favorably with statistics gathered from a random sample of undergraduate students from the University of Manitoba population at large. A survey was conducted for the Housing and Student Life office of the university in 1989. It indicates that in 1989, 51.6% of

Table 23

Frequencies and Percentages for Paid Employment

<u>Code</u>	<u>Employed hours per week</u>	<u>Frequency</u>	<u>Percentage</u>
0	0	153	51.0
5	1-5	20	6.7
10	6-10	41	13.7
15	11-15	31	10.3
20	16-20	31	10.3
25	> 21	24	8.0
Total		300	100.0

Table 24

Descriptive Statistics for Paid Employment

Mean	7.317	Standard Deviation	8.754
Mode	0.000	Median	0.000
Kurtosis	-0.882	Skewness	0.756

undergraduates were not employed, 23.3% worked 1 to 10 hours per week, 18.8% worked 11 to 20 hours per week, and 6.3% worked over 20 hours (Walker, 1989). Table 24 presents descriptive statistics for hours spent in paid employment. The mean is 7.317 with a standard deviation of 8.754 and the variable is reasonably normally distributed.

Educational Attainment Variables

Two educational attainment variables, grades and educational expectations, are included in this study. A description of each follows.

Grades. Question 11 of Part III of the questionnaire asked students to indicate their grade point average. Respondents selected one of eight choices, each of which represents a range of grade point averages. Coded values for each of the choices presented to respondents were assigned as indicated in Table 25 which shows frequencies and percentages for data collected on grades. Data are recoded to reduce the skewness of the distribution. Specifically, code 3 represents the first 3 response choices on the questionnaire for this variable. Therefore, code 3 represents a range of grade point averages from 0 to 1.9. Data are missing for 11 respondents.

Review of these data indicate that 7.1% of respondents have grade point averages of below 2.5, 25.9% have averages in the 2.5 to 2.9 range, 38.7% have averages of 3.0 to 3.4,

Table 25

Frequencies and Percentages for Grades

<u>Code</u>	<u>Grade point range</u>	<u>Frequency</u>	<u>Percentage</u>
3	0.0 - 1.9	6	2.0
4	2.0 - 2.4	15	5.1
5	2.5 - 2.9	77	25.9
6	3.0 - 3.4	115	38.7
7	3.5 - 3.9	77	25.9
8	4.0 - 4.5	7	2.4
Total		297	100.0

Table 26

Descriptive Statistics for Grades

Mean	5.886	Standard Deviation	0.993
Mode	6.000	Median	6.000
Kurtosis	0.197	Skewness	-0.435

25.9% have averages of 3.5 to 3.9, and 2.4% are in the 4.0 to 4.5 grade point average range. Table 26 shows descriptive statistics for this variable. The mean is 5.886 with a standard deviation of 0.993 and the variable is reasonably normally distributed.

Educational expectations. In question 12 of Part III of the questionnaire respondents were asked to identify the highest level of education they expected to complete. Six choices were available ranging from less than a bachelor's degree to a doctorate degree. These choices were coded with values "1" through "6" ascending in conjunction with the amount of education students expected to complete. Table 27 shows frequencies and percentages for data collected on educational expectations. Recoding of data to normalize the distribution collapses the first two categories into one. That is, code 2 includes those respondents expecting to achieve a bachelors degree or less. Data are missing for 5 respondents.

Slightly over half of the students indicated that they expected to complete a bachelors degree or a second bachelors degree. The other half expected to complete a pre-masters program or a graduate degree. Table 28 shows descriptive statistics for educational expectations. The mean is 3.545 with a standard deviation of 1.368 and the variable is reasonably normally distributed.

Table 27

Frequencies and Percentages for Educational Expectations

<u>Code</u>	<u>Expected education</u>	<u>Frequency</u>	<u>Percentage</u>
2	< bachelors bachelors	100	33.0
3	second bachelors	67	22.1
4	pre-masters	23	7.6
5	masters	97	32.0
6	doctorate	16	5.3
Total		303	100.0

Table 28

Descriptive Statistics for Educational Expectations

Mean	3.545	Standard Deviation	1.368
Mode	2.000	Median	3.000
Kurtosis	-1.494	Skewness	0.207

The Procedure

In order to test the theoretical model described in chapter 2, the data are analyzed using a structural equation modeling technique. This procedure involves calculation of Pearson product moment correlations between all variables in the model and then calculating regression coefficients to estimate the magnitude of relationships between the independent and dependent variables when other variables are controlled. In addition, regression coefficients to estimate the effects of the interaction effect between numbers of credit hours and paid employment on grade point average and educational expectations are included in the analyses. This is done because, as discussed in chapter 2, some previous literature suggests that the effects of paid employment on academic achievement may be different depending on the numbers of hours students are employed. More specifically, it has been argued that 15 to 20 hours of employment per week has been identified as a threshold (D'Amico, 1984; & Hammes & Haller, 1983). Hours of employment greater than this threshold are considered to detract from educational achievement and expectations while hours less than this threshold are considered not to detract from educational achievement and expectations. In the statistical literature, this is called a non-linear effect, and the relationship may be examined by using a

multiplicative term to measure the interaction effect (Jaccard, 1990, p. 21). The interaction between credit hours and paid employment is, therefore, included in the equations that predict educational achievement and expectations.

Usually both standardized and unstandardized regression coefficients are presented. Standardized regression coefficients indicate the amount of change in the dependent variable, in standard deviations, in relation to a one standard deviation change in an independent variable when other variables are controlled. Standardized regression coefficients are considered sample specific, and allow for the analysis of variables which have different scales (Asher, 1976; Pedhazur, 1982). Unstandardized regression coefficients indicate the number of units of change in the dependent variable that occur in relation to a one unit change in the independent variable. Unstandardized regression coefficients are population specific allowing comparisons across populations (Asher, 1976; Pedhazur, 1982).

Comparison of the effects of different variables within a theoretical model makes the use of sample specific statistics most appropriate. The population specific statistics are suitable for comparing a causal model across different groups (Pedhazur, 1982). In this study, the

effects of social background, university background, social psychological and time usage variables on the educational attainment variables are compared. Therefore, the sample specific, standardized regression coefficients are used for discussing the results. Nevertheless, the unstandardized regression coefficients are also presented so that these may be compared with the results of other studies using similar variables.

Summary

This chapter has described the sample, the operationalization of the variables in the theoretical model and the procedures used in this study. The sample for this study is undergraduate students from the Faculty of Education at the University of Manitoba. Four social background, two university background, two social psychological, four time usage, and two educational attainment variables are included in the theoretical model. A structural equation modelling technique is used to test the theoretical model.

CHAPTER 4

Results

This study is concerned with the effects of students' time use upon their educational attainment. Time use of undergraduate students in activities that are related to their status as students and time use in paid employment are examined for their effects upon students grade point averages and educational expectations. In addition, as the review of literature indicates there are many factors besides time use which influence achievement and educational expectations. Consequently, the theoretical model depicting the manner in which social background variables (gender, age, father's occupation, father's education) university background variables (years of university, and number of credit hours), social psychological variables (motivation and self concept of ability), and time usage variables (attending classes, studying, in schools, and paid employment) affect educational attainment (grade point average and educational expectations) was developed.

In this chapter, the impact of background, social psychological, and time usage variables on academic

attainment are reported. The first section of this chapter reports the correlation coefficients for all the variables in the model. Following this, the relationships between the social background variables, the university background variables and the social psychological variables are examined. Second, the relationships between the background variables, the social psychological variables and the time usage variables are examined. Finally, the relationships between the background variables, the social psychological variables, the time usage variables, and the educational attainment variables are examined.

Correlation Matrix

The correlation coefficients calculated for the 14 variables in the model are reported in Table 29. The relationships of particular relevance to the main questions posed in this study are considered. More specifically, the relationships of other variables in the model with the time usage variables, the intercorrelations between the variables in the time usage category, and, finally, the relationships of all variables in the model with the educational attainment variables are included in the overview of the correlation matrix that follows.

Several relationships exist between the background and the time usage variables. Not surprisingly, the strongest relationship is between the number of credit hours in which

Table 29
Correlation Coefficients, Means, and Standard Deviations for Variables in the Theoretical Model

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Gender	-													
2. Age	-.164**	-												
3. Father's Occupation	-.021	-.103*	-											
4. Father's Education	-.066	-.105*	.683***	-										
5. Years of University	-.258***	.222***	.044	.105*	-									
6. Number of Credit Hours	-.051	-.245***	.081	.014	.021	-								
7. Motivation	.180***	.199***	-.163**	-.159**	-.086	-.073	-							
8. Self Concept	-.172***	.176***	.086	.084	.251***	.156**	.141**	-						
9. Attending Class	.018	-.179***	.085	.024	-.204***	.485***	.053	.023	-					
10. Studying	-.004	.036	-.130**	-.111*	.054	.282***	.176***	.215***	.283***	-				
11. In Schools	-.053	-.219***	-.022	-.082	-.005	.084	-.012	-.004	.109*	.072	-			
12. Paid Employment	.016	-.146**	.057	.028	.023	-.216***	-.003	-.026	-.180***	-.163***	-.015	-		
13. Grade Point Average	-.063	.274***	.066	.030	.193***	.103*	.199***	.651***	.015	.226***	.039	-.109*	-	
14. Educational Expectations	-.202***	.215***	.166**	.121*	.313***	.066	-.047	.279***	-.002	.132**	.008	.076	.301***	-
Means	1.65	24.10	9.70	3.81	3.33	27.12	3.50	3.67	15.75	13.83	5.05	7.32	5.89	3.55
Standard Deviations	.48	4.89	3.47	2.53	1.56	6.24	1.24	0.71	5.61	7.08	4.58	8.75	0.99	1.37

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

students are enrolled and the hours they spend attending classes (.485 $p \leq .001$). The number of credit hours is also positively related to the amount of time students spend studying (.282 $p \leq .001$), but is negatively related to hours in paid employment (-.216 $p \leq .001$). In other words, students enrolled in greater numbers of credit hours study more hours per week and are employed for fewer hours per week than students enrolled in fewer numbers of credit hours. Age is negatively related to the time students spend in paid employment (-.146 $p \leq .01$), suggesting that younger students have a greater tendency to work than older students. The age of students is also negatively correlated with the time they spend in schools (-.219 $p \leq .001$) and perhaps surprisingly, the time they spend attending classes (-.179 $p \leq .001$). The number of years of university which students have previously taken is negatively related to the time they spend attending classes (-.204 $p \leq .001$). The occupation and the education of students' fathers are negatively correlated with the time students spend studying (-.130 $p \leq .01$ and -.111 $p \leq .05$ respectively), indicating that students from lower socioeconomic backgrounds study more than students from higher socioeconomic backgrounds.

Few significant relationships exist between the social psychological variables and the time usage variables.

Studying represents the only time usage variable with any notable relationship to the social psychological variables. Not surprisingly, amount of time spent studying relates to self concept of ability (.215 $p \leq .001$) slightly more strongly than to motivation (.176 $p \leq .001$). Students who report studying more hours also report higher levels of self concept of ability and higher levels of motivation than students who report studying fewer hours.

All interrelationships between the four time usage variables are positive with the exception of those related to paid employment. In other words, the variable paid employment relates negatively to all other time usage variables.

The social and university background, the social psychological, and the time usage variables all have important relationships with the educational attainment variables. Age and years of university each have positive relationships with grade point average (.274 $p \leq .001$; and .193 $p \leq .001$ respectively). As well, age, father's occupation, father's education, and years of university are all positively related to educational expectations (.215 $p \leq .001$; .166 $p \leq .01$; .121 $p \leq .05$; and .313 $p \leq .001$ respectively). Gender is negatively related to educational expectations (-.202 $p \leq .001$), indicating that male students have higher educational expectations than female students.

Both of the social psychological variables, self concept of ability and motivation, relate positively with grade point average. A strong positive relationship exists between self concept of ability and grade point average (.651 $p \leq .001$), and between motivation and grade point average (.199 $p \leq .001$). Not surprisingly, a positive relationship is also reported between self concept of ability and educational expectations (.279 $p \leq .001$).

The last set of relationships to be considered are those between the time usage variables and the academic attainment variables. Studying and grade point average has a correlation coefficient of .226 ($p \leq .001$); studying and educational expectations has a positive correlation of .132 ($p \leq .01$), and hours in paid employment and grade point average has a negative correlation of $-.109$ ($p \leq .05$).

Multivariate Relationships

The theoretical model presented in chapter 2 suggests that social background variables, university background variables, social psychological variables, and time usage variables directly affect the educational attainment variables. The model also suggests that the social psychological variables and the time usage variables intervene between the social and university background variables and the educational attainment variables. In this section, standardized and unstandardized regression

coefficients are presented as estimates of the effect parameters. As discussed in chapter 3, the standardized regression coefficients are discussed throughout because the analyses are of variables within the model. Each of the statistically significant effect parameters are discussed in the sections that follow.

Social Background, University Background, and Social Psychological Variables

Table 30 reports the effect of the two types of background variables on the social psychological variables, motivation and self concept of ability. The standardized regression coefficients, the unstandardized regression coefficients, and the total amount of variance explained for each of the variables are reported. Step 1 includes only the effects of the social background variables and step 2 includes the effects of both the social and university background variables.

The first social psychological variable reported is motivation. Age is the social background variable with the strongest relationship to motivation. The standardized regression coefficient, .217 ($p \leq .001$), indicates that a change of one standard deviation in age results in 21.7% of a standard deviation change in motivation. Generally, this indicates that older students are more motivated than

Table 30
Standardized and Unstandardized Regression Coefficients and R²s
for the Social Psychological Variables^a

Independent Variables	Motivation		Self concept	
	Step 1	Step 2	Step 1	Step 2
1. Gender	.210*** (.545)	.193*** (.501)	-.140* (-.208)	-.083 (-.123)
2. Age	.217*** (.055)	.234*** (.059)	.165** (.024)	.178** (.026)
3. Father's Occupation	-.100 (-.036)	-.103 (-.037)	.070 (.014)	.053 (.011)
4. Father's Education	-.053 (-.026)	-.042 (-.021)	.044 (.012)	.039 (.011)
5. Years of University		-.080 (-.063)		.180** (.081)
6. Number of Credit Hours		.005 (.001)		.187*** (.021)
R ²	.106	.111	.063	.128

^a Unstandardized coefficients in parenthesis *p≤.05 **p≤.01 ***p≤.001

younger students when the other social background variables are considered. Inclusion of the university background variables, in step 2, shows that the effect of age on motivation is increased slightly to .234 ($p \leq .001$). This indicates that university background variables suppress the effect of age on motivation. In other words, some of the effects of age on motivation are masked by the university background variables. This means that when university background variables are held constant across the sample of students, age has an even greater effect on motivation than can be seen without controlling for the effects of the university background variables.

Gender also has a significant effect on motivation. The results indicate that when only the social background variables are considered, females are generally more motivated than males (.210 $p \leq .001$). Inclusion of the university background variables, in step 2, illustrates that the effect of gender on motivation is reduced by approximately 8% to .193 ($p \leq .001$). This indicates that some of the effect of gender is, in fact, effects of the covariation between gender and years of university and number of credit hours. Nevertheless, the coefficient of .193 ($p \leq .001$) remains statistically significant.

Table 30 also shows the amount of variance in motivation explained by the two types of background variables. The

social background variables, gender, age, father's occupation, and father's education, on their own, account for 10.6% of the variance in motivation. Inclusion of years of university and number of credit hours, in step 2, increases the amount of variance explained for motivation to 11.1%.

The second social psychological variable reported is self concept of ability. Table 30 indicates that the university background variables, number of credit hours (.187 $p \leq .001$) and years of university (.180 $p \leq .01$), have the strongest relationships with self concept of ability. In this respect, the greater the number of credit hours in which students are enrolled, the more positive are their self concepts of ability. Similarly, the greater the number of years of university in which students have participated the more positive are their self concepts of ability.

A moderately positive relationship exists between age and self concept (.165 $p \leq .01$), indicating that older students have more positive self concepts of ability than younger students. Controlling for the effects of university background variables, in step 2, increases the strength of this relationship by approximately 10% to .178 ($p \leq .01$).

Gender is also moderately related to self concept (-.140 $p \leq .05$), illustrating that males generally have more positive self concepts than females. This relationship is affected

by university background variables, as seen in step 2, where the coefficient drops to $-.083$. The correlation coefficient between gender and years of university ($-.258$ $p \leq .001$), reported in Table 29, suggests that males have greater numbers of years of university than females. The approximate 40% drop in the effect of gender upon self concept, when university background variables are taken into account, is largely explained by the over-representation of males in the third and fourth years of university. To some extent it is the amount of university experience, not gender, which is responsible for the relationship reported in step 1 between gender and self concept of ability.

The amount of variance in self concept of ability explained by the background variables is also reported in Table 30. The social background variables are shown to account for only 6.3% of the variance. This is almost doubled to 12.8% when the university background variables are included.

Social Background, University Background, Social Psychological, and Time Usage Variables

Table 31 shows the effect of the two types of background variables and the social psychological variables on the four time usage variables, attending class, studying, time in schools, and time spent in paid employment. For each of the time usage variables, step 1 indicates the

Table 31
Standardized and Unstandardized Regression Coefficients and R²s for the Time Usage Variables

Independent Variables	Attending Class			Studying			In Schools			Paid Employment		
	Step 1	Step 2	Step 3	Step1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
1. Gender	-.013 (-.159)	-.014 (-.166)	-.035 (-.406)	-.005 (-.073)	.035 (.523)	.020 (.298)	-.102 (-.981)	-.092 (-.882)	-.100 (-.955)	-.008 (-.144)	-.018 (-.333)	-.023 (-.415)
2. Age	-.177** (-.203)	-.009 (-.011)	-.028 (-.032)	.021 (.030)	.095 (.137)	.034 (.049)	-.246*** (-.231)	-.251*** (-.235)	-.264*** (-.248)	-.144* (-.258)	-.233*** (-.417)	-.247*** (-.442)
3. Father's Occupation	.118 (.191)	.051 (.083)	.062 (.101)	-.100 (-.205)	-.138 (-.282)	-.132 (-.268)	.055 (.073)	.055 (.072)	.059 (.077)	.063 (.159)	.101 (.254)	.103 (.259)
4. Father's Education	-.076 (-.168)	.004 (.008)	.009 (.019)	-.040 (-.113)	-.013 (-.036)	-.013 (-.035)	-.153* (-.276)	-.157* (-.283)	-.155* (-.281)	-.031 (-.106)	-.071 (-.244)	-.070 (-.243)
5. Years of University		-.219*** (-.785)	-.207*** (-.743)		.042 (.192)	.027 (.120)		.041 (.119)	.042 (.122)		.079 (.441)	.076 (.426)
6. Number of Credit Hours		.483*** (.434)	.486*** (.437)		.318*** (.360)	.288*** (.327)		.014 (.011)	.012 (.008)		-.282*** (-.396)	-.288*** (-.405)
7. Motivation			.096 (.436)			.144* (.822)			.046 (.169)			.036 (.258)
8. Self Concept			-.021 (-.170)			.152** (1.529)			.015 (.095)			.031 (.388)
R ²	.040	.285	.292	.018	.115	.160	.071	.073	.075	.024	.100	.102

^a Unstandardized coefficients in parenthesis * p ≤ .05 ** p ≤ .01 *** p ≤ .001

effects of the social background variables, step 2 adds the effects of the university background variables, and step 3 adds the effects of the social psychological variables. The amount of variance explained in time usage is also reported for each step.

The first time usage variable considered is the amount of time spent attending class. University background variables show the strongest relationships to attending class. The strongest relationship is between number of credit hours and attending class ($.483 p \leq .001$), indicating, as one would expect, that students enrolled in more credit hours spend more time in class than students enrolled in fewer credit hours. The other university background variable, years of university, has a negative relationship with attending class, indicating that students in years one and two are more likely to attend classes than students in years three and four. This relationship remains important but is diminished by approximately 5% when the mediating effects of the social psychological variables are added.

In step 1 the coefficient for the relationship between age and attending class is significant and the sign of the relationship is negative ($-.177 p \leq .01$), indicating that younger students spend more time attending classes than older students. However, this effect results almost totally from the university background variables. When these

variables are added, the coefficient is reduced to being almost zero (-.009). In other words, the effect of age is, for all practical purposes, accounted for by years of university and number of credit hours.

The amount of variance in time spent attending classes that is explained by the social background variables, the university background variables, and the social psychological variables is 29.2%. The social background variables alone account for only 4% of the variance, this rises sharply to 28.5% when the university background variables are added, and then rises slightly to 29.2% when the social psychological variables are added.

The second time usage variable considered is the amount of time spent studying. Three variables have statistically significant effects upon time spent studying. The strongest effect is associated with the number of credit hours taken (.318 $p \leq .001$). As one would expect, students enrolled in more credit hours spend more time studying than students enrolled in fewer credit hours. Also, not surprising is the mediating effect of the social psychological variables in this relationship. More specifically, in step 3, the social psychological variables reduce the effect of credit hours on studying by approximately 9% to .288 ($p \leq .001$). In other words, part of the effect of credit hours upon studying is

due to the relationship between credit hours and the social psychological variables.

The two social psychological variables, self concept of ability and motivation, are the other two variables which significantly affect the amount of time that students spend studying. Self concept of ability is more strongly related to studying (.152 $p \leq .01$) than motivation (.144 $p \leq .05$), but both of these variables have positive effects, indicating that students with higher levels of self concept of ability and motivation study more than students with lower levels of self concept of ability and motivation.

The amount of variance explained in studying increases from step 1 to step 3. The social background variables explain approximately 1.8% of the variance in studying. Including the university background variables raises the amount of variance explained to approximately 11.5%, and including the social psychological variables raises the amount of variance explained to approximately 16%.

The third time usage variable considered is the amount of time spent student teaching or working as a volunteer in schools. Age is the most important factor affecting the amount of time that students spend in schools. This relationship indicates that younger students spend more time in schools than older students. The relationship gains strength as the university background ($-.251$ $p \leq .001$) and the

social psychological ($-.264 p \leq .001$) variables are added in steps 2 and 3. This increase in strength indicates that the university background and the social psychological variables slightly suppress the effect of age upon the amount of time students spend in schools. In essence, these results suggest that younger students spend more time volunteering and student teaching in schools than older students.

The education of the students' fathers is the only other variable with a statistically significant effect upon time in schools. The negative relationship between father's education and time in schools persists from step 1 through to step 3 indicating that students with father's who have lower levels of education are more likely to spend more time in schools than students with father's who have higher levels of education. The amount of variance in time in schools explained by the background and social psychological variables is approximately 7% with very little increase from step 1 to step 3.

The final time usage variable considered is the amount of time students spend in paid employment. The number of credit hours in which students are enrolled has a negative effect on the numbers of hours they spend in paid employment ($-.282 p \leq .001$). This effect indicates that students enrolled in greater numbers of credit hours spend fewer hours per week in paid employment than students enrolled in

fewer credit hours. The relationship increases by approximately 2% to $-.288$ ($p \leq .001$) when the social psychological variables are taken into consideration.

Age also has a significant effect upon the amount of time students spend in paid employment. In step 1, prior to taking the university background and the social psychological variables into account, the effect is $-.144$ ($p \leq .05$). The relationship gains strength as the university background and the social psychological variables are added in steps 2 ($-.233$ $p \leq .001$) and 3 ($-.247$ $p \leq .001$). This increase in strength indicates that the university background and the social psychological variables suppress the effects of age on the time students spend in paid employment. The sign of the relationship indicates that younger students spend more time in paid employment than older students.

Approximately 10.2% of the variance in time spent in paid employment is explained by the social background, the university background, and the social psychological variables. The majority of this variance is due to the university background variables. Social background variables account for 2.4% of the variance, this rises to 10% with the inclusion of the university background variables, and it rises to 10.2% when the social psychological variables are added.

As one might have expected, the number of credit hours students take affects their time usage; greater numbers of credit hours having a positive effect on attending class and studying and a negative effect on time spent in paid employment. Surprisingly, age has an effect on time in schools and time in paid employment. Specifically, younger students are more likely to spend more time in both of these activities than older students. Perhaps it is predictable that the effects of motivation and self concept of ability upon time spent studying are positive.

Social Background, University Background, Social Psychological, Time Usage, and Educational Attainment Variables

Table 32 shows the effects of the two types of background variables, the social psychological variables, and the time usage variables, on the two educational attainment variables, grade point average and educational expectations. For these two variables, step 1 indicates the effects of the social background variables, step 2 adds the effects of the university background variables, step 3 adds the effects of the social psychological variables, step 4 adds the effects of time usage variables, and step 5 adds the effect of the interaction between credit hours and paid employment. The amount of variance explained in educational attainment is also reported for each step.

Table 32
Standardized and Unstandardized Regression Coefficients and R²s for the Academic Attainment Variables^a

Independent Variables	Grade Point Average					Educational Expectations				
	Step 1	Step 2	Step 3	Step 4	Step 5	Step 1	Step 2	Step 3	Step 4	Step 5
1. Gender	-.015 (-.032)	.029 (.060)	.064 (.133)	.068 (.141)	.067 (.139)	-.163** (-.469)	-.103 (-.296)	-.080 (-.231)	-.075 (-.215)	-.071 (-.202)
2. Age	.280*** (.057)	.299*** (.061)	.173*** (.035)	.176*** (.036)	.176*** (.036)	.208*** (.058)	.183** (.051)	.163** (.046)	.203*** (.057)	.204*** (.057)
3. Father's Occupation	.102 (.029)	.086 (.025)	.062 (.018)	.074 (.021)	.072 (.021)	.175* (.069)	.172* (.068)	.158* (.062)	.156* (.061)	.163* (.064)
4. Father's Education	-.012 (-.005)	-.012 (-.005)	-.032 (-.012)	-.023 (-.009)	-.020 (-.008)	.012 (.007)	-.010 (-.006)	-.019 (-.010)	-.002 (-.001)	-.013 (-.007)
5. Years of University		.128* (.081)	.026 (.016)	.020 (.012)	.020 (.013)		.238*** (.208)	.204*** (.178)	.195** (.171)	.192*** (.168)
6. Number of Credit Hours		.168** (.027)	.055 (.009)	.030 (.005)	.042 (.007)		.087 (.019)	.056 (.012)	.047 (.010)	.005 (.001)
7. Motivation			.079 (.063)	.070 (.056)	.069 (.056)			-.044 (-.049)	-.070 (-.077)	-.068 (-.075)
8. Self Concept			.603*** (.848)	.592*** (.833)	.590*** (.830)			.171** (.331)	.150** (.290)	.157** (.304)
9. Attending Class				-.027 (-.005)	-.028 (-.005)				.028 (.007)	.029 (.007)
10. Studying				.070 (.010)	.072 (.010)				.111 (.021)	.106 (.021)
11. In Schools				.078 (.017)	.079 (.017)				.039 (.012)	.039 (.012)
12. Paid Employment				-.059 (-.007)	-.016 (-.002)				.131* (.021)	-.019 (-.003)
Interaction					-.044 (.000)					.153 (.001)
R ²	.084	.127	.465	.479	.479	.108	.168	.192	.218	.220

^a Unstandardized coefficients in parenthesis * p ≤ .05 ** p ≤ .01 *** p ≤ .001

The first educational attainment variable considered is grade point average. The strongest effect on grade point average is from self concept of ability. The relationship between these two variables (.603 $p \leq .001$) indicates that students with higher self concepts of ability generally have higher grade point averages students with lower self concepts of ability. Consideration of the time usage variables, in step 4, results in a small reduction in the amount of the effect of self concept of ability upon grade point average. However, this effect is small, and the effect of self concept of ability upon grade point average (.592) remains statistically significant at the .001 level. Essentially no change in this effect is introduced by the inclusion of the interaction between credit hours and paid employment in step 5.

The next strongest effect upon grade point average is from the variable age. The relationship indicates that older students have higher grade point averages than younger students. The effect of age upon grade point average remains statistically significant after taking into account all the other variables included in the model and the interaction between credit hours and paid employment. Specifically, prior to taking variables other than the social psychological variables into consideration, the effect of age upon grade point average is .280 ($p \leq .001$).

Controlling for the effects of the university background variables results in a strengthening of the effect to .299 ($p \leq .001$). In turn, the social psychological variables mediate approximately 42% of the effect reported in step 2, resulting in a reduced coefficient of .173 ($p \leq .001$). Inclusion of the time usage variables, in step 4, results in a slight increase in the effect of age on grade point average to .176 ($p \leq .001$).

The university background variables, years of university and number of credit hours each have an effect on grade point average (.128 $p < .05$; and .168 $p \leq .01$, respectively) in step 2. However, for both of these variables, the effect upon grade point average is mediated by the social psychological variables, and reduced so that neither of them remains statistically significant in steps 3, 4, or 5. More specifically, the effects of these variables are being mediated by students' self concepts of ability in step 3.

The amount of variance in grade point average explained by all of the variables in the model is 47.9%. The social background and the university background variables explain approximately 12.7% of the variance in grade point average. Variance explained rises to 46.5% with the addition of the social psychological variables and to 47.9% with the addition of the time usage variables.

The addition of step 5, the effect of the interaction between credit hours and paid employment does not change the amount of variance in grade point average that is explained. The fact that there is very little change in the respective effect parameters in steps 4 and 5, and that the addition of the interaction between number of credit hours and paid employment does not explain additional variance in the model, means that the interaction variable does not support the possibility of a non-linear relationship between paid employment and grade point average.

The final educational attainment variable considered is educational expectations. Years of university has the strongest effect of all of the variables in the model upon educational expectations (.238 $p \leq .001$). Not surprisingly, the relationship is positive, indicating that students with more years of university education have higher educational expectations than students with fewer years of university education. Consideration of the social psychological variables reduces the effect of years of university upon educational expectations to .204 ($p \leq .001$). This reduction of approximately 14% indicates that this relationship is mediated by the social psychological variables, motivation and self concept of ability. As seen in Table 29, it is the higher self concepts of ability of students with high numbers of years of university that is largely responsible

for approximately 14% of the effect of years of university upon educational expectations. A small amount, 4.4%, of the effect of years of university upon educational expectations is mediated by the time usage variables. The interaction of credit hours and paid employment has essentially no effect upon the relationship between years of university and educational expectations (step 5).

Age is the next most important variable affecting educational expectations (.208 $p \leq .001$). This means that older students generally have higher educational expectations than younger students. Approximately 12% of this effect is accounted for by years of university and number of credit hours. The effect of age is further reduced to .163 ($p \leq .01$) when the social psychological variables are taken into account. This indicates that the social psychological variables also mediate part of the effect of age. Table 29 indicates that the variable age is positively related to both of the social psychological variables, motivation and self concept of ability (.199 $p \leq .001$; and .176 $p \leq .001$ respectively). Thus, the higher levels of motivation and higher self concepts of ability of older students are the reason for some of the effect of age upon educational expectations.

When time usage variables are considered, in step 4, the effect of age rises to .203 ($p \leq .001$), indicating that time

usage variables suppress some of the effect of age upon educational expectations. Specifically, when the differential ways in which older and younger students spend their time is accounted for, age has more effect upon educational expectations than when these variables are not considered. The interaction between credit hours and employment, in step 5, does not change the effect of age upon educational expectations.

The occupation of the students' fathers has a relatively consistent effect upon students' educational expectations from step 1 (.175 $p \leq .05$) to step 5 (.163 $p \leq .05$) although approximately 8% of the effect is mediated by the social psychological variables. Smaller amounts of the effect are explained by the time usage variables and the interaction variables. The effect of father's occupation is such that the higher the father's occupational level the higher the educational expectations of the student. It is interesting that father's education, the other socioeconomic status factor considered, has virtually no effect on educational expectations. This is especially interesting considering the fact that the relationship between father's occupation and father's education (.683 $p \leq .001$), reported in Table 29, would suggest that these variables would be similar in their effects upon dependent variables.

Students self concepts of ability also have an effect upon educational expectations. Self concept of ability is reported to affect educational expectations whether or not time usage variables are considered. The coefficients indicate that students with higher self concepts of ability have higher educational expectations than students with lower self concepts of ability. Prior to taking into account the time usage variables, the effect of self concept of ability upon educational expectations is .171 ($p \leq .01$), and after they have been considered the effect is .150 ($p \leq .01$). This indicates that time usage mediates, to some degree, the effect of self concept of ability upon educational expectations. Specifically, approximately 12% of the effect of self concept of ability is accounted for by the way in which students use their time. Table 29 indicates that motivation and self concept of ability are related only to one time usage variable, studying (.176 $p \leq .001$ and .215 $p \leq .001$ respectively), and this suggests, not surprisingly, that it is a combination of the social psychological variables and time spent studying that affect educational expectations. The effect of the interaction between credit hours and paid employment, in step 5, has a very small effect.

The only time usage variable to affect educational expectations is paid employment (.131 $p \leq .05$). The

coefficient indicates, somewhat surprisingly, that students who work more hours have higher educational expectations than students who work fewer hours. As previously reported, the students who engage in more hours of employment are characterized as the younger students who are also taking large numbers of credit hours of course work. The inclusion of the effect of the interaction between paid employment and credit hours, in step 5, reduces the effect of paid employment on educational expectations (-.019) such that there is no longer an effect. In other words, the interaction between credit hours and employment appears to account, to some degree, for the effect of paid employment on educational expectations. Prior to considering this interaction effect, the effect of paid employment is such that the greater the numbers of hours worked the higher the educational expectations of the student, while after this interaction variable is included, there is no effect. The change seen as a result of the inclusion of the interaction indicates that the combination of hours worked and credit hours taken seems to make a difference to educational expectations. Moreover, because this potentially non-linear effect is of such small magnitude and because it is not seen in relation to the other variables in the model it is interpreted as inconsequential. In further support of this interpretation, consideration of the effect of the

interaction between credit hours and paid employment on educational expectations results in no substantial changes in the effects of other variables prior to taking the interaction into account. In addition, there is no appreciable change in the variance in educational expectations explained by the interaction effect. Furthermore, the interaction effect itself has a statistically non significant effect upon educational expectations (.153).

This model explains approximately 22% of the variance in educational expectations. Approximately 10.8% is explained by the social background variables. This rises to approximately 16.8%, when the university background variables are considered; and continues to rise by approximately 2.4% and 2.8% respectively when social psychological and time usage variables are taken into account. The interaction accounts for an insignificant .2% increase in the variance explained in educational expectations.

In summary, students' self concepts of ability have the greatest effect upon their grade point averages. Students with high self concepts of ability have higher grade point averages than students with low self concepts of ability. Age also affects grade point average. In this respect, older students have higher grade point averages than younger

students. None of the time usage variables have an effect on grade point average.

Years of university, age, father's occupation, self concept of ability, and hours in paid employment all have an effect upon educational expectations. Specifically, higher levels of education are expected by students who have four to five years of university education, who are relatively older students, who have father's with high prestige occupations, who have positive self concepts of ability, and who work a relatively high number of hours in paid employment.

The model tested explains considerably more of the variance in grade point average than the variance in educational expectations. For grade point average, the model explains approximately 47.9% of the variance; for educational expectations, the model explains approximately 22% of the variance. As one might have expected, the university background variable, number of credit hours, affects students time usage; greater numbers of credit hours having a positive effect upon attending class and studying and a negative effect upon time spent in paid employment. Surprisingly, age has an effect on time in schools and time in paid employment. Specifically, younger students are more likely to spend more time in both of these activities than older students. Perhaps it is predictable that the effects

of motivation and self concept on time spent studying are positive.

Chapter 5

Conclusions

This study is an attempt to understand the effects of the time use of undergraduate students upon their educational attainment by examining their time use in activities related to their status as students, and their time use in paid employment. More specifically, the effect of time usage variables upon educational attainment, when social and university background variables and social psychological variables are controlled is examined. In this chapter, the study is summarized, and the findings are discussed.

Summary

Employment represents one way in which university students use their time in activities other than those associated with their status as students. It has been estimated that approximately half of undergraduate university students in Canada are employed at least part time while they are enrolled in university. Although increasing involvement in employment has been on the rise for the past decade, little is known about the significance

of this phenomenon. It has been argued, for example, that employment has a negative, a positive, and no effect upon academic attainment. Furthermore, university students are free to make many decisions about the way they use their time in relation to all of the statuses they hold. Of interest in this study were the effects of the time usage decisions that students make upon their educational attainment.

A review of literature on role theories identified two opposing views of the possible effects of involvement in more than one status at a time. Role conflict theory suggests that involvement in more than one status creates conflicts for the time needed to devote to role behaviours associated with other statuses (Goode, 1960). Role expansion theory, on the other hand, suggests that involvement in more than one status stimulates energy and, thereby, produces more resources to devote to role behaviors and ultimately results in more functional behaviours (Marks, 1977; Thoits, 1983; Moen et al., 1989).

Furthermore, a review of the literature on time and learning suggests that, in general, the amount of time students spend in learning activities is positively related to grade point average and educational expectations (Bloom, 1974; Karweit, 1984; Karweit & Slavin, 1982; and Strother, 1984). More specifically, the greater the amount of time

students spend studying and attending class the higher are their grade point averages and the higher are their educational expectations. In this literature, the effect of student employment on educational attainment is controversial. Some studies suggest positive effects; others suggest negative effects; and others suggest neutral effects of student employment on educational attainment (Radwanski, 1987; Hammes & Haller, 1983; D'Amico, 1984; Wagstaff & Mahmoudi, 1976; Metzner & Bean, 1987; Van-de-Water & Augenblick, 1987). The positive effects of employment are generally considered to be associated with students working less than 15 to 20 hours a week while negative effects are generally considered to be associated with students working more than 15 or 20 hours a week. Nevertheless, two studies involving college students found no significant relationship between the number of hours students worked and their grade point averages (Metzner and Bean, 1987; Van-de-Water & Augenblick, 1987).

The research literature on academic attainment identifies that social and university background variables have an effect upon achievement and expectations and that the social psychological variables, motivation and self concept of ability, probably intervene between the background characteristics of students and their educational attainment (Clifton & Roberts, 1988; Brookover & Erickson,

1975; Gordon, 1972; Heckhausen, 1967; Marjoribanks, 1976; Porter et al., 1982; Reitzes & Mutran, 1980;).

In order to examine the effects of students' time usage upon educational attainment, a theoretical model involving time usage variables is proposed. Time usage variables are presented in the model as having effects upon students' grade point averages and their educational expectations. Also included in the model are other variables that were considered to be potentially influential upon time usage and educational attainment. The model which is presented in Figure 1 presents the ways in which four social background variables, two university background variables, and two social psychological variables are hypothesized to affect the four time usage and the two educational attainment variables.

The data for this study were obtained from undergraduate students who participated in the 1987 self study survey of Education students at the University of Manitoba. The sample surveyed was selected using a stratified random cluster sampling procedure. The sample includes 308 undergraduate students representing a response rate of approximately 76% of the undergraduate students who were surveyed. Approximately 35% of respondents are male and approximately 65% are female.

Fourteen variables are used in the study. Students' personal, socioeconomic, and university background characteristics are defined by the variables gender, age, father's occupation, father's education, years of previous university education, and number of credit hours in which students are enrolled. Students' social psychological characteristics are measured by self reported scales of motivation and self concept of ability. Time usage is operationalized as a self report of the number of hours per week students spend in attending classes, studying, student teaching or volunteering in schools, and in paid employment. The majority of students spend from 11 to 15 hours per week in class and 6 to 15 hours per week studying. Approximately two thirds of the students spend time teaching or volunteering in schools and approximately half of the students report spending time in paid employment. The dependent variables are measured by self reported grade point average and an indication of the highest level of education students expect to complete.

Structural equation modeling techniques are used to test the relationships between the variables in the theoretical model. Pearson product moment correlation coefficients indicate that the number of credit hours in which students are enrolled has a positive relationship with the time students spend attending classes. Students' ages and years

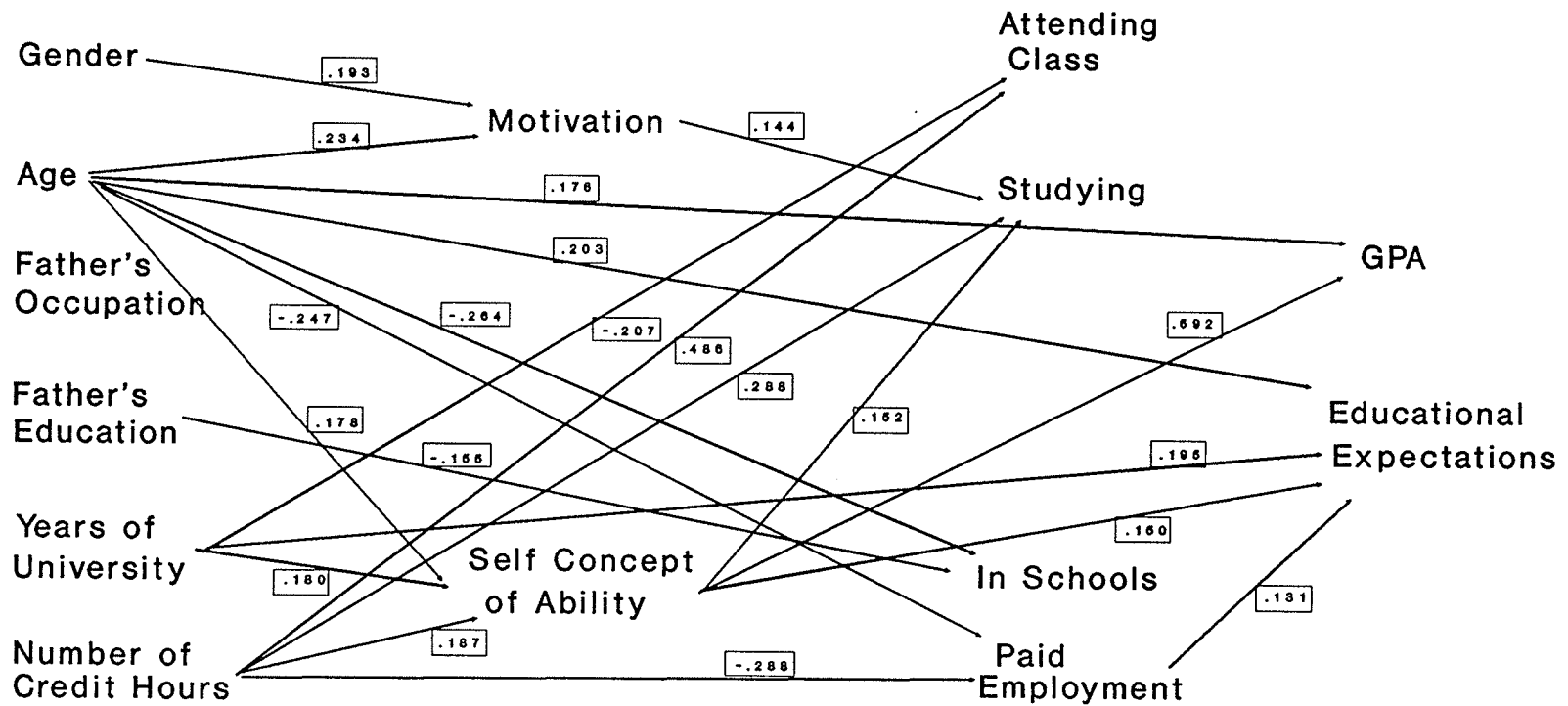
of university have negative relationships with the time they spend attending classes. The number of credit hours in which students are enrolled, students self concepts of ability, and students motivation all have positive relationships with the number of hours students spend studying. The occupations of students' fathers and the education of students' fathers are both negatively related with the hours students spend studying. The hours students spend studying are positively related to both of the academic attainment variables, grade point average and educational expectations. Students' ages relate negatively with the time they spend in schools. The time they spend attending classes relates positively with the time students spend in schools. Students' ages, the number of credit hours in which they are enrolled, the amount of time they spend attending classes, and the amount of time they spend studying are all negatively related to the amount of time they spend in paid employment. The time that students spend working is also negatively related with students' grade point averages. In other words, the only time use variables with relationships with the educational attainment variables are studying and paid employment. Prior to taking into account other variables, the time students spend studying appears to be positively related to grade point averages and educational expectations and the time students spend in paid

employment appears to be negatively related to students' grade point averages.

When other variables are controlled, a number of statistically significant effects are indicated. Figure 2 presents a summary of the statistically significant standardized regression coefficients. Attending class is found to be positively affected by numbers of credit hours and negatively affected by years of university. Credit hours affects studying indicating, not surprisingly, that students taking more credit hours study more than students taking fewer credit hours. Studying is also affected by motivation and self concept of ability. Students with high levels of motivation and more positive self concepts of ability study more than students with lower levels of motivation and less positive self concepts of ability. Age and credit hours affect hours in paid employment such that younger students and students enrolled in fewer credit hours work more hours than older students and those enrolled in greater numbers of credit hours.

Time usage variables have little effect upon grade point average and educational expectations. In fact, when all other variables are taken into account, effect parameters show that the time usage variables do not influence grade point average and educational expectations with the exception of a small positive effect of paid employment on

Figure 2
Summary of Significant Effects



educational expectations which disappears when the interaction between credit hours and paid employment is added.

Variables in this model that do affect grade point average are self concept of ability and age. High self concept of ability is predictive of higher grade point averages, and older students have higher grade point averages than younger students. Educational expectations are affected by age, years of university, and self concept of ability. Each of these are positively related to educational expectations.

These findings are discussed in the next section. This discussion focuses mainly on findings related to the effects of time usage upon educational attainment. In addition, other important findings related to educational attainment are discussed. The discussion also includes a few practical implications of findings and a few suggestions for further research.

Discussion

The findings of this study support the findings of previous research which indicates that time spent by students in paid employment has a relatively insignificant effect upon their educational attainment (Metzner & Bean, 1987; Van-de-Water & Augenblick, 1987). This can be

interpreted as indicating that students, in order to meet educational goals, generally make appropriate adjustments in the way they use time according to the time demands that have been made upon them. This lends support to Marks' (1977) theory that involvement in multiple statuses does not necessarily create a conflict for fixed amounts of time, but rather that time itself is relatively flexible depending upon the energy stimulated by the activity, or the creativity individuals apply to their time management. Nevertheless, the study does not support the research which suggests that involvement in multiple statuses has a positive effect upon functional behaviour (Thoits, 1983; Moen et al., 1989). A positive effect of hours spent in paid employment upon educational attainment would have been necessary in order to draw such a conclusion.

The fact that no threshold effect, indicating a negative effect of time in employment with time beyond 15 to 20 hours per week, is evident, may indicate that this threshold theory, derived mainly from studies of high school students, may not apply to university students. The assumption that university students are likely to be more autonomous in their decision making about their use of time than are high school students, may explain the lack of an identifiable threshold. In other words, the flexibility and control over time use decisions that university students may have, may

mean that thresholds do not apply to this group of students.

A study of time use factors similar to this one but involving university students who are enrolled in programs with fixed curricula in terms of credit hours and class hours would help to clarify this interpretation. Students enrolled in occupational therapy, for example, generally enroll on a full time basis into a specified program with from 46 to 54 credit hours of courses depending upon the year in the program. This group is virtually homogeneous in terms of credit hour and class hour requirements, and, because of these fixed requirements, perhaps they would be less autonomous in decision making about their use of time. Less autonomy and more rigid time demands may result in the identification of threshold effects related to involvement in activities associated with statuses other than that of student. Furthermore, study of students with greater time demands related to their academic program would further test the validity of role conflict and role expansion theories as they relate to time. If role conflict theory is valid, one would expect increased demand to negatively influence function, but if role expansion is valid, one would expect increased demand to positively influence function.

It is surprising that time usage variables, in general, do not have more influence on grade point averages and educational expectations of students. Time management is

often part of remedial work to improve students standing and, intuitively, use of time in relation to studying, attending classes, and time in schools would seem to be important factors that would relate to grade point average and educational expectations. Perhaps time usage affects factors in the educational experiences of students other than grades and expectations. For example, time usage may influence such quality of life factors as perceptions of knowledge gained or perceptions of the experience students have in the faculty.

This study suggests that there are many ways students can use time and still succeed. Furthermore, it can be interpreted that more work needs to be done to understand the ways in which time is used by students in order to be able to identify predictive variables related to time use. Self reported average hours per week in various activities may not provide enough information, or the right information, or may not be a valid indicator of time use. Perhaps it is more important to identify the different ways in which individuals perceive time in relation to their functional activities and, furthermore, to identify the values or principles that guide individuals time use behaviours.

Contrary to findings in other studies (Miller, 1970; Wagstaff & Mahmoudi, 1976; Polachek et al., 1978), time

spent studying and attending class were not found to have effects upon grade point average and educational expectations. The positive correlation coefficient between studying and grade point average (.229 $p \leq .01$) reported in Table 29 was found to be due to self concept of ability when other variables in the model are taken into account. This could mean that the way in which students spend their time in the three activities, studying, attending class, and time in schools is not in itself important to grade point average and educational expectations. This could mean that student evaluations are not related to class activities, or it could indicate that students learn in different ways and at different rates causing these measures of time to be irrelevant, in a general way, to educational attainment. Another interpretation of this finding could be that measurement of the time usage variables is not sensitive enough to identify time use factors that influence educational attainment. Put another way, perhaps this means that important factors are so individualized that it is not possible to identify predictive relationships between time use and attainment. More study is required to examine time use behaviours of students over time and then propose a model of the relationship of time use to educational attainment.

Although time use variables have little effect upon the dependent variables in this study, and more knowledge about time use seems necessary, some interesting information about factors which affect time use are identified. For example, students with three to four years of university appear to spend less time attending class than students with little previous experience at university. An interpretation of this may be that students with experience have learned that there is not much value in attending class or they choose to learn material presented in class some other way, such as the independent study of textbooks. These students may use their experience to identify what they need to learn and they may choose not to spend time in class to learn the material that is required.

Another interesting finding about the time use of students was that age and fathers education appear to affect time in schools. Younger students and students with fathers with less education spend more time volunteering or student teaching in schools than older students and students whose fathers have more education. Perhaps this suggests that younger students and students from families with less formal education value this type of practical experience more than older students and students from families with more formal education. Younger students, perhaps value experience because they lack familiarity with practical experience and

value it as a learning opportunity. Students from backgrounds less influenced by formal education, perhaps value experience because it is more of a family value for them than it is for students from families with more formal education. In other words, perhaps people with less formal education place more value on learning by doing.

Age was also found to be an important factor related to time spent in paid employment. Younger students appear to be more likely to be involved in paid employment than older students. This could be a reflection of the trend toward increased employment previously identified in the introduction. The reasons for this trend could be the rising costs of post secondary education, or perhaps increased consumerism in society resulting in an increase in students' desires for spending money. The rising employment rates of students could also be related to the availability of less financial support from parents and other sources than was the case in the past. Although not necessarily age specific, these factors may impact more upon younger students than older students.

For example, younger students may be less likely to have saved money for their education or may be less likely to be eligible for certain types of loans or other funding, such as retraining grants, that are available to older students. In addition, younger students may have had more consumer

goods throughout their lives than older students, and, therefore, may be more dependent on having spending money to maintain their lifestyle than are older students who may not have developed the same degree of dependency on consumer goods as part of their lifestyle. Perhaps younger students are able to work more than older students because they have fewer other statuses that demand their time than do older students. More extensive study of the reasons students work is needed in order to know whether these or other speculations about rising student employment are valid.

This study reaffirms the importance of self concept of ability in the educational attainment process. In addition, this study supports other findings of a positive relationship between age and educational attainment. This study indicates that experience, specifically being older, having more years of university and being involved in greater numbers of credit hours, has a positive effect on self concept of ability. Program admission procedures, for example, selection criteria, and program practices, for example, teaching methods, may also influence self concept of ability. Further study to identify factors that influence self concept of ability is warranted since this variable seems to have such a strong effect on attainment.

Some practical implications arise from this study. One practical implication that can be interpreted is related to

the finding that the hours students spend working do not necessarily affect students' grades or expectations. This finding suggests that it is inappropriate to generalize that involvement in paid employment detracts from educational goals or causes students to have lower grades and lower educational expectations.

Other practical implications relate to the finding that self concept of ability is related positively to both grades and educational expectations. Program practices within and related to educational programs could be directed to facilitate the development of positive self concepts of students.

This study also provides several indications for further study. Further study is indicated to find the factors that would explain more of the variance in time usage than have been explained using this model. Furthermore, even though this study suggests that time use has little effect upon educational attainment, it may be that students' patterns of time use are so varied that the inconsistencies cancel each other out, thereby creating the appearance of little or no effect. Perhaps further research using ethnographic studies could examine students' use of time. From intense observation, perhaps time usage models that would include factors that would explain more of the variance in time use

and the implications of different time use patterns could be developed.

Also indicated, are further studies of the effects of time usage. For example, dependent variables which measure quality of student life could be introduced into a theoretical model similar to the one tested in this study. Perhaps time use patterns affect the quality of the learning experience, the retention of knowledge, or the ability to apply knowledge beyond the classroom. These and other models incorporating time usage variables could potentially provide useful information about the effects of decisions students make about how they spend their time.

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