TURNING THE TABLES ON GRADING: THE QUALITY OF STUDENT LIFE AS A PERFORMANCE INDICATOR FOR INSTITUTIONS OF HIGHER EDUCATION

by

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TURNING THE TABLES ON GRADING: THE QUALITY OF STUDENT LIFE AS A PEFORMANCE INDICATOR FOR INSTITUTIONS OF HIGHER EDUCATION

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A Thesis/Practicum submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

ABSTRACT

Within the tradition of applied sociology of education, the aim of this research project is to determine whether or not the first theoretically informed and empirically validated measures of the student perception of "quality of university student life" can be established as performance indicators for institutions of higher education. In order to do this, a theoretical model following the status attainment approach is constructed to examine the causal impact of these indicators on student academic attainment. More specifically, the study examines the effects of cognitive and affective quality of university student life variables on academic attainment, while controlling for important university background, social background, and individual social psychological variables.

The study was conducted in a faculty of education at a large Western Canadian university in 1992, and it is based on data collected from questionnaires administered to a stratified random cluster sample of 269 undergraduate students.

Lance Roberts and Rodney Clifton's theory of effective learning and quality of university student life guides the project. In short, this theory suggests that the ideal learning experience for university students is one in which challenging cognitive demands occur in a supportive, affectively warm environment. To evaluate the theoretical model, the structural equation modeling procedures of multiple regression and path analysis are employed. The results indicate that the quality of university student life variables have the largest significant effects on academic attainment. More specifically, the affective quality of student life is found to have the strongest positive relation to academic attainment, while the university background, social background, and personality variables are controlled. Therefore, the findings of this study provide partial confirmation of Roberts and Clifton's theory in that a warm university environment, characterized by positive interactions with professors and among peers, is an important prerequisite for students to attain high grades.

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CHAPTER I

INTRODUCTION TO THE STUDY

Statement of the Problem: Establishing Quality of Student Life Measures as Performance Indicators for Institutions of Higher Education

Higher education is facing a common but unwelcome dilemma--to prove its worth to an increasingly skeptical and critical public. In North America, students, taxpayers, and their political representatives are spearheading a campaign to increase the "accountability", "performance", and "productivity" among universities and colleges. In the words of the President of the University of Manitoba, "it is clear that [educational] institutions are generally under pressure to 'be accountable' for prudent use of resources and effective operation" (Naimark, cited in Berkowitz, 1995: 6). By developing valid and reliable measures of the quality of universities, and then investigating the impact of such measures on important student outcomes such as learning, sociologists can contribute to the creation of valid performance indicators, and therefore make a significant contribution to the assessment and rationalization of post-secondary educational institutions.

At the present time, however, the overwhelming majority of existing measures of the quality of educational institutions are based on an eclectic collection of quantitative management statistics--ranging from incoming student grades and class sizes to operating budgets and reputational surveys--that have not been shown to relate to important student outcomes. This is problematic because only those measures of the quality of educational institutions that relate to student outcomes--such as student satisfaction, academic attainment, and attendance--can be deemed valid "performance indicators" (Berkowitz, 1995: 6). Thus, it is critical to understand the definition of a performance indicator when evaluating the quality of educational institutions.

What is a Performance Indicator?

According to the Association of Universities and Colleges of Canada (AUCC), there is no end to examples of poorly used statistics aimed at measuring whether universities are performing as they should. "Quite often, anything that a number can be attached to is called a performance indicator" (Tausig Ford, 1995: 2). A true performance indicator, however, is a policy relevant statistic, number, or qualitative description that indicates whether or not a university is performing as it should. In other words, a performance indicator is a result-oriented measure that indicates progress toward an established goal and suggests means of improvement.

The widespread development and utilization of performance indicators is a very recent phenomenon, beginning in 1990. This "accountability movement", as it has come to be known, developed out of a largely campus-based "assessment movement" characterized by voluntary compliance, which was characteristic of the 1980s. Beginning in this decade, however, standardized reporting of performance indicators to broader non-campus constituencies such as legislators, employers, and the public, became the norm (Gaither, 1995: 1).

According to Ruppert (1995: 13-15), four converging conditions have stimulated the growth of performance indicators in the 1990s. The first is the decline in government appropriations for higher education. On the heels of a global economic recession, North American universities and colleges have faced significant decreases in funding from government sources. This means that more of the responsibility of paying for higher education is shifting to students and families. Another significant trend has been the change in the demographic profile of students seeking postsecondary education. Decline in the size of the traditional college-going cohort (18- to 22-year-olds) during the 1980s was more than offset by growth in older and minority student enrollment rates. Thirdly, societal needs and expectations of higher education have risen. Higher education is being given more value and importance by governments and the public. Governments view

higher education as a critical source of research and public service that can be marshaled toward addressing many of the complex "ills" plaguing modern society; and for individuals, a university or college degree serves as a gateway for personal economic mobility that a high school diploma served a generation ago. Even though a majority of individuals feel a university education is becoming increasingly indispensable, they also see it slipping increasingly out of reach. According to public opinion polls, an overwhelming 88 percent agree that a high school diploma is no longer enough to qualify for a well-paying job in the United States (Yankelovich, 1993-1994). Nearly the same number of people, however, feel that university costs are rising at a rate that will put university out of reach for the majority of the population. According to Ruppert (1995: 15):

> In short, [the first three conditions indicate that] higher education has entered into a new era in which colleges and universities face the challenge of educating a growing, increasingly skeptical, and diverse population of students to higher levels of attainment with, at best, moderate increases in government resources. To many observers, both within and outside the academy, these conditions raise serious concerns about limited student access, erosion of quality, and additional burdens related to cost. Beyond the issue of cost, many are asking how well the money that colleges and universities do receive is being spent.

The final condition to stimulate the growth of performance indicators has been increased skepticism and scrutiny of all social institutions. The public's concerns about higher education in the 1990s provide a glimpse into prevailing public attitudes toward institutions more generally, particularly public and government institutions. Put simply, the public is asking and demanding answers to tougher and more probing questions about costs, affordability, and results. Many government policy makers have responded to these concerns by applying to the public sector the management principles developed initially in the business sector and private industry.

It is important to note that performance indicators can be contrasted with what are known as "management statistics", which include the range of data maintained by academic institutions, such as numbers of students, numbers of graduates, and teaching costs. Even though performance indicators may be based on management statistics, as noted above, they are evaluative measures with a purpose to assess and judge.

An examination of *Maclean's* magazine's university ranking technique provides a good example of the distinction between performance indicators and management statistics. Each year *Maclean's* ranks the "excellence" of Canadian universities using questionnaire data collected from university presidents on a range of factors in six broad groupings: student body, classes, faculty, finances, library, and reputation (Dowsett Johnston, 1995: 31).[1] Even though the magazine purports that its indicators are "meaningful performance measures" (Dwyer, 1994: 29), the author of the study provides no justification for the selection of the statistics, nor does the author attempt to relate the indicators to student outcomes. Therefore, *Maclean's* ranking measures are nothing more than management statistics. For example, while *Maclean's* cites average class size as an

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[1] 'Student Body' measures include: incoming students' average high school grades, proportion of out-of-province students in first year undergraduate classes, percentage of international graduate students, graduation rates, and the percentage of full-time undergraduate students in their second year who go on to graduate from the institution within one year of the expected time period. 'Class Rankings' embrace the entire distribution of class sizes at the first and second year levels, as well as third and fourth year levels. The 'Faculty Rankings' assess the caliber of faculty by calculating the percentage of those with Ph.D.s, and the number who win national awards and secure grants from each of the three major federal granting agencies. The 'Finance' section examines the amount of money available for current expenses per student, as well as the percentage of the budget spent on student services, scholarships, and bursaries. The 'Library' measure assesses the breadth and currency of the university's collection in terms of: the number of volumes per total number of students, total holdings regardless of student numbers, and the percentage of operating budget allocated to library services and updating the collection. Finally, 'Reputation' is measured by a reputational survey sent to university graduates as well as members of the community, including chief executive officers of corporations, university administrators, and high school guidance counselors.

important demonstration of a university's quality, it has been demonstrated that there is little or no relationship between class size and student satisfaction or academic performance (Vale, 1995: 40). "There is an assumption that [a] smaller [class] is better, but there is evidence that . . . what goes on in the classroom matters more than the size of the class" (Gilbert, cited in Vale, 1995: 40). *Maclean's* also makes the assumption that universities that have high per-student costs are high quality institutions, while a set of indicators being developed by the Alberta government will likely reward those institutions that keep their costs per student low, seeing that this is evidence of a university acting efficiently and using public dollars wisely. *Maclean's* is not justified in concluding that small class sizes and high per-student costs are performance indicators of universities unless they can provide evidence that each statistic is related to positive student outcomes.

Considering the immense popularity of using objective quantitative management statistics to evaluate the functioning of universities, it follows that more subjective evaluations of the students, professors, and others working in educational environments have not received adequate attention as potential performance indicators. This is particularly unfortunate in light of the fact that sociologists are becoming increasingly interested in the recently articulated argument, as proposed by Beck (1990), that the "quality of student life", as perceived by students, should be a principal yardstick for measuring the worth of educational institutions.

In keeping with the problems associated with prior investigations into the quality of higher education, at the present time there is no evidence to support the claim that a student's subjective perception of his or her quality of student life can be interpreted as a performance indicator of universities or colleges. One cannot assert that quality of student life in a university is a valid performance indicator of the quality of academic institutions until social scientists conduct studies to determine whether or not quality of life has a significant causal impact on students' learning. This research project is the first

study of its kind to examine such a link. *Within the tradition of applied sociology of education, the aim of this research project is to establish theoretically informed and empirically validated measures of the student perception of "quality of university student life" as performance indicators for institutions of higher education by examining the causal effect of these indicators on student academic attainment.*

The purpose of this opening chapter is to provide an introduction to the main components of this research project. Discussion begins with a review of Roberts and Clifton's theory of effective learning and quality of university student life that provides the basis for the project, followed by a discussion of the practical and intellectual relevance of a sociological investigation into quality of university student life. The focus then turns to a review of both theoretical and methodological limitations of this project. The chapter closes with an overview of the remainder of the study, which outlines chapter contents.

Theoretical Approach

The conceptual framework guiding this project is based on Lance Roberts and Rodney Clifton's theory of effective learning and quality of university student life (Clifton & Roberts, 1993; Roberts & Clifton, 1988, 1991)--a theory that is grounded in prominent sociological theories of socialization and social psychology.

Effective Learning

Schools are agents of socialization that systematically influence the individuals who constitute their membership--students. In the classroom context, teachers, as representatives of the school system, are responsible for changing students in specified directions. Students resist learning, however, because genuine learning threatens each student's identity and individual integrity (Bredemeier & Bredemeier, 1978: 168-174). In addition, not all students adjust to the school environment in the same way (Webb &

Sherman, 1989: 320). Some join the system wholeheartedly and become model students, while others reject the institution and define themselves through rebellion. Another group, the large majority, learn to "'make do" within the school. Thus, the question for teachers at all levels becomes: what conditions optimize effective learning by overcoming students' resistance to change while making sure their identities are preserved?

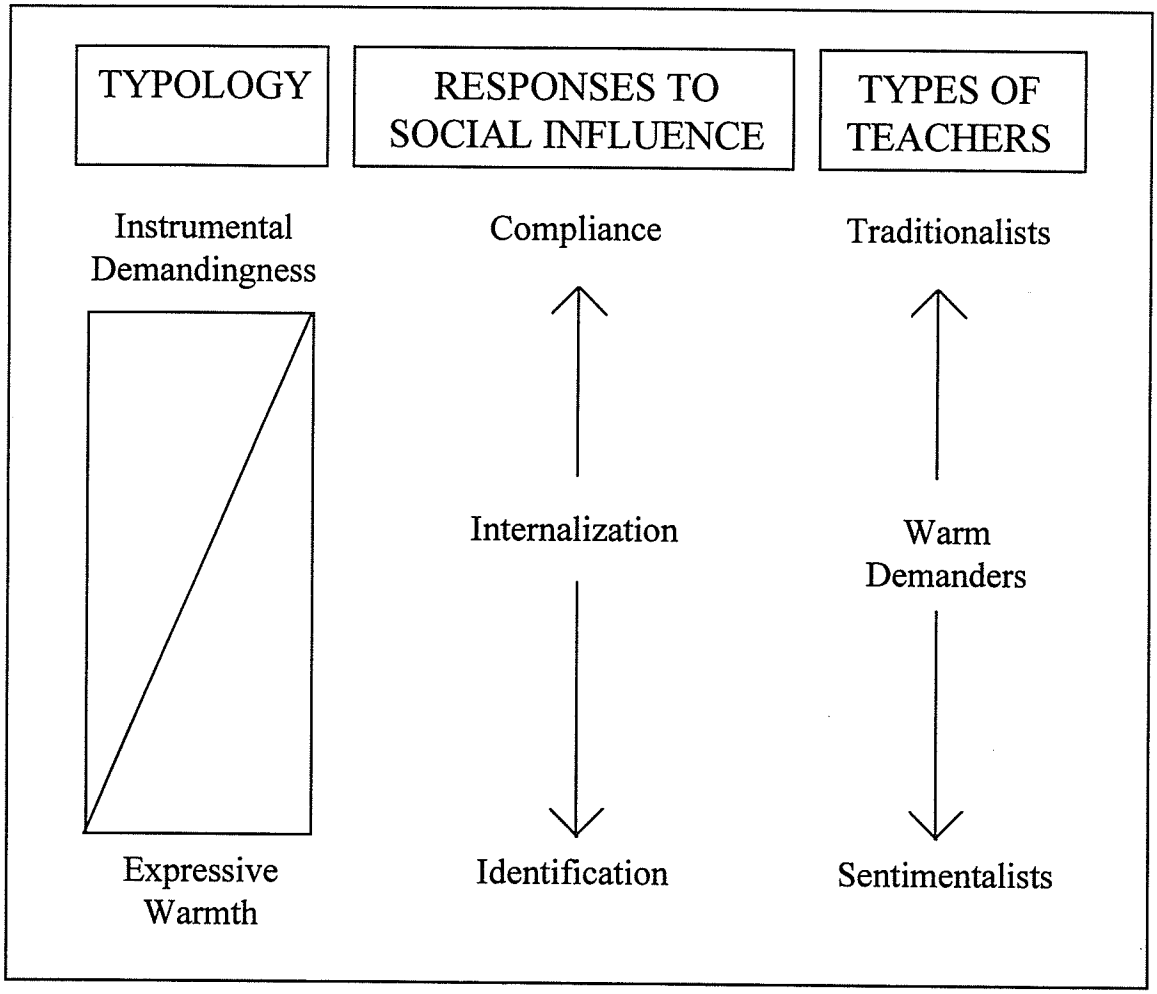
Social psychologists note that power and affect are two prominent dimensions that must be regulated if significant and lasting changes in individuals are to occur (Brim, 1966; Boldt, Lindquist, & Percival, 1976; Coser, 1979; Roberts & Clifton, 1988). Teaching requires both the imposition of clear and meaningful demands of the learner (the power dimension) as well as the ability to understand and support the learner's personal integrity and dignity (the affective dimension). Therefore, to ensure that students learn, teachers necessarily incorporate some combination of power and affect into their teaching styles. The power dimension can be conceptualized as *instrumental demandingness*. Teachers must have demonstrated expertise in a subject area to be able to make credible demands on their students. The affective dimension, in contrast, can be labeled as *expressive warmth*. Students need to feel as if their teachers understand them, support them, and appreciate the difficulties they are experiencing, in order to make the changes that are being demanded (Clifton & Roberts, 1993: 86-87).

Even though demandingness and warmth are separate dimensions, they are not independent of each other; theoretically, these dimensions are related in an inverse manner. At some point, the more teachers are empathic and identify with their students, the less they will be able to make demands on them; conversely, the more teachers make demands on their students, the less likely it is that they will be perceived by their students as being empathic. Figure 1.1 illustrates the inverse relationship between the two dimensions. Demandingness (or power) and warmth (or affect) form a continuum such that enlarging one of these dimensions compresses the other. Since each of these

dimensions is associated with effective learning, varying the mixture of these variables has important consequences for the learning process.

Figure 1.1:

The Relationship Between Two Dimensions of Effective Learning: Instrumental Demandingness & Expressive Warmth [a]



[a] From Clifton & Roberts (1993: 89).

On one end of the continuum, the combination of high demandingness and low warmth is not conducive to effective learning. Students consider their teachers to be threatening, impersonal, and uncaring because they demand extensive changes and do not provide social support for the preservation of identity and integrity. The result is likely to

be short term *compliance* by the students; in other words, students will invest minimal resources in meeting their teachers' demands, while devoting significant energy to self-maintenance. According to Kelman (1961; 1974) compliance is one of three responses to social influence. This term best describes the mode of behavior of a person who is motivated by a desire to gain reward or avoid punishment. When people comply, they do what the influencing agent wants them to do, or what they think he or she wants them to do, in order to receive a positive response from him or her. They learn, essentially, to say or do the expected thing in particular situations, regardless of what their private beliefs may be. Therefore, in classes characterized by high demandingness, students do what their teachers want them to do in order to earn good grades or to avoid poor grades. Kleinfeld (1975) labeled these highly demanding teachers as "traditionalists".

On the opposite end of the continuum, the combination of high warmth and low demandingness does not lead to effective learning either. Students identify with their highly reinforcing teachers because they display extensive understanding and support, yet they make few demands for change. The problem with this arrangement, of course, is that because few demands for change are being made, little systematic change is likely. The *identification* that students demonstrate when interrelating with their teachers is another one of Kelman's (1961; 1974) responses to social influence. Identification is a response to social influence brought about by an individual's desire to be like the influencer. In identification, as in compliance, people do not behave in a particular way because such behavior is intrinsically satisfying; rather, they adopt a particular behavior because it puts them in a satisfying relationship to the person with whom they are identifying. Thus, if one person finds another person appealing, the first person will be inclined to accept influence from the second person and adopt similar values and attitudes--not in order to obtain a reward or avoid a punishment (as in compliance), but simply to be like that person. Therefore, when students find their empathic teachers attractive, they conform to classroom expectations. This type of learning is not likely to

be effective in the long term, however, because it is based on relationships; students are learning only because it puts them in a satisfying relationship with the highly reinforcing teacher. These extremely warm teachers, who are liked by their students, are known as "sentimentalists" (Kleinfeld, 1975).

There is, however, in the middle of the continuum, an optimal combination of the dimensions of power and affect that is conducive to encouraging the long-term, genuine, and enduring changes in students that are characteristic of effective learning. In these circumstances, teachers make rational and meaningful demands of their students without sacrificing their ability to understand and support each student's personal integrity and dignity. These conditions maximize the chances of encouraging lasting and meaningful changes to students, since frustration is minimized through support of students' integrity, while clear and specific expectations exist for change. In other words, this combination of warmth and demandingness encourages students to *internalize* the knowledge and skills they are taught. Internalization is Kelman's (1961; 1974) third response to social influence. The internalization of a value or belief is the most permanent, most deeply rooted response to social influence. The motivation to internalize what is learned is the desire to be right. The reward for the belief is, then, intrinsic. Therefore, if a teacher is perceived to be warm, trustworthy, and of good judgment, the student accepts the beliefs that the teacher advocates and integrates them into his or her own belief system. Students incorporate what is being taught into their personal identities and make the classroom material 'their own'. Such an internal incorporation of ideas is most likely when students identify with their teacher and feel that he or she is concerned about them, while appreciating that the teacher has specific, rational expectations regarding what needs to be learned (Clifton & Roberts, 1993: 88-91). When teachers incorporate this optimal combination of power and affect into their teaching styles, they are known as "warm demanders" (Kleinfeld, 1975).

Quality of University Student Life

In context of this research project, Roberts and Clifton's theory of effective learning maintains that when university students perceive challenging cognitive demands to be taking place in a supportive environment, this will have a positive effect on their learning experiences. In accordance with their theory, Roberts and Clifton conceptualize that the mission of a university, as an institution of learning, is to enhance quality of student life by stimulating and challenging students' intellects in the cognitive domain (instrumental demandingness) while supporting and enhancing their feelings of dignity and self-worth in the affective domain (expressive warmth) (Roberts & Clifton, 1991: 13). Therefore, based on the principles of socialization and social psychological theories, the quality of university student life is conceptualized as consisting of two complementary domains: the cognitive domain, based on the model presented by Bloom, Engelhart, Furst, Hill, and Krathwohl (1956); and the affective domain, based on the work of Williams and Batten (1981) and Spady and Mitchell (1979).[2] Universities need to attend to both of these domains of students' lives, because cognitive development, which is the main objective of universities, requires both a demanding intellectual environment and a supportive emotional climate.

The Cognitive Domain

First, to determine whether or not the objective of enhancing quality of life in the cognitive domain is being achieved from the student perspective, Roberts and Clifton employed Bloom et al.'s (1956) taxonomy of six, hierarchically ordered educational objectives: knowledge, comprehension, application, analysis, synthesis, and evaluation. As the lowest level of cognitive demandingness, *knowledge* represents the ability of

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[2] The theoretical background, conceptualization, and operationalization of concepts in Williams and Batten's (1981) Quality of School Life Scales are discussed at length in Chapter II--Review of the Literature.

students to remember and recite specific facts, concepts, and principles of a discipline. *Comprehension* requires students to translate this information into their own words, while *application* involves the ability to take the material and utilize it in new situations. *Analysis* is more complex in the sense that it involves decomposing complicated ideas into their basic factual and conceptual components, while *synthesis* involves composing complicated ideas from basic components. Finally, the most demanding cognitive stage, *evaluation*, denotes the students' ability to judge the value of material.

The Affective Domain

To examine student perceptions of whether or not quality of life in the affective domain is being enhanced by a university, Roberts and Clifton employed two global dimensions of positive and negative affect, as well as four specific dimensions of status, identity, opportunity, and professors (Williams & Batten, 1981). First, *positive affect* refers to students' perceptions of their experiences in university as a whole, in terms of their happiness or positive feelings; conversely, *negative affect* pertains to the intensity and frequency with which students are consumed by negative feelings such as depression and restlessness. *Status* relates to the sense of well-being that students experience from having the confidence and respect of their peers, while *identity* taps students' recognition of their mutual interdependence as parts of an integrated institution. *Opportunity* concerns the feelings of competence students gain from having opportunities to demonstrate their abilities and be assessed on their competencies. Finally, *professors*, refers to the sense of well-being that students experience from having supportive and helpful relationships with their professors, both inside and outside of the classroom.

In short, Roberts and Clifton's theory of effective learning and quality of student life posits that the ideal learning experience for university students is one in which challenging cognitive demands occur in a supportive environment. A discussion of the means of operationalizing these theoretical domains is contained in Chapter III.

The Relevance of the Problem

Investigating the causal link between quality of university student life and academic attainment is a worthwhile sociological endeavour for both practical and intellectual reasons.

Practical Justifications for the Study

Practically speaking, not only will this project contribute to the development of theoretically informed[3] and empirically validated university performance measures, it will be the first to evaluate the quality of university life in the classroom, as perceived by students, as a performance indicator.

Ruppert (1995: 11) has noted that North American policy makers are growing increasingly interested in performance indicators because their results serve many purposes. By reporting performance publicly, policy makers are seeking to demonstrate higher education's accountability to its many constituencies. In addition to accounting for the public investment in higher education, performance data can be used to assess progress toward institutional goals, or to guide planning and budget decisions. Other applications include identifying areas in which productivity or efficiency can be improved.

It is also important to note that performance indicators can provide both formative and summative evaluations of universities. A distinction between these two types of evaluation was proposed by Scriven (1967). *Summative evaluations* judge a program's

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[3] Roberts and Clifton's conceptualization of quality of university student life is the only measure to be theoretically grounded in prominent sociological theory. The other atheoretical or superficially theoretical measures of quality of student life in post-secondary educational institutions cited in the sociology of education literature are discussed in Chapter II--Review of the Literature. They include: the College Characteristics Index (Pace & Stern, 1958); the Environmental Assessment Technique (Astin & Holland, 1961); the College and University Classroom Environment Inventory (Fraser, Treagust, & Dennis, 1986); and the College Classroom Environmental Scales (Winston et al., 1994).

value and worth once the program is complete; such evaluations deal with the product of program development; they provide decision makers with information about whether to use the final form of the program. In contrast, *formative evaluations* judge a program's value and worth midway through the program so that meaningful changes can be made prior to program completion. Therefore, formative evaluations deal with the process of program development; they are goal-oriented and provide meaningful feedback about program strengths and weaknesses (Mason & Bramble, 1989: 395-396).

Intellectual Justifications for the Study

The execution of this study is further justified by the following intellectual reasons. First, this research will provide the first empirical test of Roberts and Clifton's theory of effective learning and quality of university student life. Several specific combinations of instrumental demandingness (the cognitive quality of university student life) and expressive warmth (the affective quality of university student life) in the classroom will be evaluated in terms of their effect on student academic attainment.

Moreover, this study will make a significant contribution to the status attainment tradition. Research on status attainment began with Blau and Duncan's (1967) seminal work on educational and occupational attainment. Their classic study of American males provided empirical support for the hypothesis that academic attainment plays an important role in the transmission of status from one generation to another. Specifically, their basic status attainment model found that a child's educational attainment is influenced by his [or her] family's social status. In the late 1960s, Sewell and his colleagues at the University of Wisconsin, extended Blau and Duncan's model by linking socioeconomic status to academic attainment by means of mediating social psychological variables (Sewell & Hauser, 1980). This "Wisconsin model" is based on social psychological theories of socialization that view educational attainment as the result of a

complex set of associations among socioeconomic status, ability, ambition, and encouragement from significant others (Kerckhoff, 1995: 478).

This project builds upon the Wisconsin model, and it is the first to include quality of university student life as an intervening social psychological variable in a status attainment model. By examining the interrelationships between social background, university background, quality of student life, individual social psychological variables, and academic attainment, this research project assesses the degree to which the quality of student life and other social psychological variables (specifically self-concept of ability and alienation) mediate the effects of students' background characteristics in predicting academic attainment.

Finally, a review of the quality of student life in education literature, which will be discussed in detail in Chapter II, provides substantial justification for the execution of this project. In short, the quality of life in educational institutions has been largely ignored by social scientists. After reviewing thousands of published articles investigating the quality of life, Michalos (1986: 59) found that a meager 1 percent of them focused on the educational domain. Secondly, to compound this problem for those sociologists interested in post-secondary education, the quality of university student life has received inadequate attention in the sociological literature, in comparison with the quality of student life in elementary and secondary schools (Fraser, Treagust, & Dennis, 1986: 43). Only two isolated exploratory studies (Fraser & Treagust, 1986; Fraser, et al., 1986; Genn, 1975) have examined the linkage between post-secondary students' subjective perceptions of their educational environments and their satisfaction (an attitudinal learning outcome measure). Therefore, this study will be the first of its kind to test the hypothesis that student perception of quality of university student life has a causal effect on academic attainment, while controlling for important social and university background characteristics, as well as individual social psychological variables.

Limitations of the Project

Readers should bear in mind the project's theoretical and methodological limitations, which will be presented under the following two subheadings.

Theoretical

The first theoretical limitation is the extent to which a theoretical model, which will be discussed in detail in Chapter III, can explain the complexity of students' learning in university. With 11 variables in the model, this study's explanatory power is limited. In broad outlines, the theoretical model guiding this study consists of the following four blocks of variables. The first block of variables includes three university background variables (year of university, number of credit hours, and program) and three social background variables (gender, age, and socioeconomic status). The second block of variables includes the cognitive and affective domains of quality university student life. The third block of variables includes two measures of individual social psychological dispositions: self-concept of ability and alienation. The final block consists of one variable: academic attainment, as operationalized by cumulative grade point average.

The second limitation pertains to the quality of student life and the individual social psychological variables in the theoretical model. In this study these variables are treated as static rather than dynamic processes. Considering the way in which these variables are measured, which will be discussed at length in Chapter III, there is no way of knowing how students' perceptions of their quality of student life, alienation, and self-concept of ability vary over time. Given the difficulty in capturing the dynamic nature of these processes, however, this study still provides a more extensive conceptualization of the social psychological processes that affect the learning of university students than has previously been examined.

Methodological

In addition to the above noted theoretical limitations, this study is also limited methodologically. The first of these methodological limitations concerns the cross-sectional nature of the study. As discussed in the third chapter, survey responses obtained from a representative sample of 269 undergraduate education students from the University of Manitoba provides the data analyzed in this study. Cross-sectional data does not, however, allow the researcher to control the causal sequence of variables introduced into the model. Therefore, the time-ordered sequence of five variable blocks in the theoretical model is an estimate, as opposed to a true representation, of causal sequence. Ideally, a study of this kind should track the same students over a period of time in order to more accurately observe how their perceptions change as a function of time.

The second limitation considers the validity of using self-report data, as opposed to qualitative techniques--such as naturalistic inquiry, case study, ethnography, or participant observation--for research in sociology of education. Some may view the approach of this study as problematic, particularly with respect to students' perceptions of interactions with their teachers and classmates. Walberg and Haertel (1980), however, have advanced five justifications for the use of self-report data in educational research. First, quantitative paper-and-pencil measurement of perceptions does not require training observers, making it more economical; in addition, perceptual techniques are based on experiences over time, whereas observational data is restricted to relatively short time spans. Thirdly, perceptual data allows one to pool students' reports or judgements, as opposed to relying on a single observer; and in many, if not most cases, students' perceptions are more important determinants of their behavior than is the competing objective reality. Finally, perceptual measures have frequently accounted for more variance in student learning outcomes than have interaction variables identified through observation.

The third limitation is the relatively small sample size of 269 students. Nevertheless, the sample was generated by employing a rigorous and sophisticated stratified random cluster procedure. The procedure involved identifying the mandatory courses in each one of four years of the undergraduate education programs, and then selecting a random sample of classes from these programs. Twenty-four classes representing approximately 20 percent of the population within each academic year were selected for the sample.

The fourth limitation addresses the issue of generalizability in that the findings of this study are based on data from a single faculty in a single Canadian university. Readers, therefore, should be careful in generalizing the results to students in faculties other than education, and other universities. In spite of this cautionary note, however, it should be noted that the students in this sample are similar in social background to students in the university, particularly the students in the faculties of arts and sciences, who are in the majority.

The final methodological limitation concerns the measurement of variables in the theoretical model. First, several variables--such as program, gender, socioeconomic status, quality of life, self-concept of ability, alienation, and grade point average--are measured at the nominal or ordinal levels. Halli and Rao (1992) and Tabachnick and Fidell (1989) suggest that researchers should proceed with caution when using structural equation modeling procedures with variables not measured on an interval level. Although some statisticians are hesitant about using regression analysis with data measured at these levels, others such as Dometrius (1992: 79-80) and Pedhazur (1982: 274-289) argue that regression analysis and other parametric methods are robust enough to be used with variables measured below the interval level. Furthermore, nominal variables can be recoded and transformed into interval level dichotomies using a procedure known as "dummy variable analysis". In addition to the shortcomings of using nominal and ordinal level variables in the model, readers should be cautioned as to the

operationalization of learning as grade point average. Other important cognitive, attitudinal, and behavioral learning outcomes--such as student satisfaction, absences, attendance, and class participation--are not included in the theoretical model.

An Overview of the Study

As pointed out at the outset, the aim of this study is to establish theoretically informed and empirically validated measures of the student perception of quality of university student life as performance indicators for institutions of higher education by examining the causal effect of these indicators on student learning. A theoretical model following the status attainment approach has been developed to guide this study of quality of student life. This model examines the effects of cognitive and affective quality of university student life variables on academic attainment, while controlling for important social background, university background, and individual social psychological variables. The purpose of this introductory chapter has been to introduce readers to the main components of the study. The chapter began with a statement of the problem to be addressed by the research project; this was followed by a discussion of the theory of effective learning and quality of university student life, a discussion of the sociological relevance of investigating quality of student life, and the limitations of the study.

To locate this project in the existing literature, Chapter II--Review of the Literature--will open with an introduction to the "quality of life" research in general, followed by a review of the quality of life research that has focused specifically on the educational domain. A review of the quality of student life research in elementary and secondary schools will follow. Five popular pioneering instruments will be examined in detail, succeeded by 13 more recently developed tools. Then, the impact of quality of elementary and secondary student life on learning outcomes will be discussed. The next major subheading in this chapter will concentrate on describing the quality of student life in post-secondary institutions. Five major instruments measuring quality of university

student life will be reviewed in detail, and then research on the impact of quality of university student life on learning outcomes will be discussed. With the review of the literature review complete, a synopsis will be presented.

Chapter III--Methodology--will begin with an overview of the theoretical model that guides this study. This introduction will be followed by an examination of five different aspects of the methodology used in the study. First, a brief background of the study will be provided, the sample of students will be described, and the measurement of the variables in the theoretical model will be discussed. Next, the data analysis techniques of multiple regression and path analysis that are employed to test the theoretical model will be outlined, and finally, the univariate and bivariate assumptions of these structural equation modeling techniques will be addressed.

In Chapter IV--Results--the theoretical model will be empirically tested. Before this is done, however, the multivariate assumptions of the structural equation modeling techniques will be discussed and verified. Once it has been established that all of the assumptions are satisfied, the zero-order correlation matrix will be examined, and then the theoretical model will be tested by three main multivariate analyses. Discussion will conclude with an examination of an interaction effect between the cognitive and affective domains of quality of life of university students.

Finally, in Chapter V--Conclusion--the most important aspects of the theoretical framework, the sample, the statistical procedures, and the results will be summarized. Under the discussion heading, the major findings will be related to Roberts and Clifton's theoretical framework, as well as the literature on quality of university student life. The discussion will be followed by a review of the practical and methodological implications of the findings for the quality of student life, with a special focus on prescriptions for further research. The chapter will close with an assessment as to whether or not the quality of student life measures should be established as meaningful performance indicators for universities and colleges.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to locate this project in the existing sociology of education literature by examining the quality of student life research in elementary, secondary, and post-secondary educational institutions. In the first section, the concept of "quality of life" is introduced by means of an overview of the history of quality of life research in general. Discussion in the second section turns to a review of numerous instruments designed to measure the quality of student life in elementary and secondary schools, followed by a review of over 50 studies that have investigated the predictability of students' learning outcomes from their perceptions of the psychosocial characteristics of their schools and classrooms. In the third section, a review of instruments designed to measure quality of student life in post-secondary institutions is presented, succeeded by a review of two exploratory studies that have examined the predictability of students' learning outcomes from their perceptions of their classes, departments, and faculties.

In sum, this literature review establishes two very important points. First, even though the general quality of life theory and research deserve accolades for development, the quality of life in educational institutions has been largely ignored by social scientists. Secondly, to compound this problem for those social scientists interested in post-secondary education, the quality of university student life has received inadequate attention in the sociological literature, in comparison with the quality of student life in elementary and secondary schools. According to Fraser, a leading researcher in this area, "despite a strong tradition of research and practical applications involving perceptions of classroom psychosocial environment in primary and secondary schools, surprisingly little analogous work has been conducted at the tertiary level" (Fraser, et al., 1986: 43).

The History & Origins of Quality of Life Research

Even though "concern about the good life is probably as old as civilization [itself]" (Schuessler & Fisher, 1985: 130), most observers note that a serious examination of the concept of quality of life began in the United States in the 1960s (Bredemeier & Bredemeier, 1978; Collins, 1989; Schuessler & Fisher, 1985). Such "thoughtful concern" (Schuessler & Fisher, 1985: 130) about quality of life began in this historical period because social conditions in the United States were undergoing rapid and extensive change. The dramatic changes characteristic of the time--from the rising power of the baby boom population to the booming economy--acted as stimuli for people to begin thoughtfully reflecting on the quality of their lives, as opposed to taking life for granted.

Society-wide recognition of quality of life issues was exacerbated when American politicians began to incorporate quality of life initiatives into their programming agendas. According to Campbell (1981: 4), American president Lyndon Johnson introduced "Great Society programmes" in the early years of the decade to improve quality of life in a wide variety of institutional sectors, from health and welfare to education and community development. With so many resources being appropriated toward social welfare policies with the intent of improving the quality of life, it became essential to determine whether or not programming goals were actually being realized. It was at this time that sociologists, along with other social scientists, came to the fore to criticize existing quantitative indices and develop valid and reliable measures of the quality of life in the gamut of societal domains. Developing these measures, however, necessitated that social scientists first develop conceptual definitions of quality of life.

Arriving at a Conceptual Definition

Even though "the terms used to invoke notions of life quality differ depending on one's profession" (Andrews, 1986: ix), a basic distinction between "quality" and "quantity" of life does appear in the literature. On one hand, quantity refers to the amount

of various outcomes, while quality refers to the degree, kind, or grade of experience. In addition to the qualitative/quantitative distinction, Gerson (1976: 794) notes that there are two traditional approaches to defining the quality of life: an individualist orientation that considers individual achievement to be the determinant of quality of life, and a transcendentalist orientation that sees an individual's quality of life as deriving from his or her contribution to society.

Campbell, Converse, and Rogers' specific definition of quality of life (or well-being) is particularly popular. They conceptualized life's quality as "a sense of achievement in one's work, an appreciation of beauty in nature and the arts, a feeling of identification with one's community, [and] a sense of fulfillment of one's potential" (1976: 1). In more general terms, quality of life refers to the degrees of satisfaction, or sense of well-being, fulfillment, or contentment that people experience in a specific domain of life activity (Roberts & Clifton, 1991: 4). Definitions along this line allowed social scientists to develop quality of life instruments that measure an individual's satisfaction with the multifaceted aspects of life, such as health, marriage, job, religious faith, government, and friends. The quality of life instruments developed for each domain aided in "humanizing" the potentially alienating encounters that individuals could have within each organizational context. While extensive work on quality of life instrumentation has occurred within psychology (Palys & Little, 1980), marital and occupational satisfaction (Michalos, 1986), and gerontology (Larson, 1978), the ensuing discussion will focus on the quality of life in the educational domain.

Quality of Life in the Educational Domain

After reviewing thousands of published articles investigating the quality of life, Michalos (1986: 59) found that a meager 1 percent of them focused on the educational domain. Therefore, despite the fact that quality of life research is well developed in other social domains, it is a topic that is seldom applied to educational institutions. In the

words of Williams and Batten, "quality of school life [as a concept] is neither well-defined nor the subject of much research aimed at definition and measurement" (1981: 49).

Quality of Student Life in Elementary & Secondary Educational Environments

Over nearly three decades, considerable attention has been shown internationally in the conceptualization, measurement, and investigation of quality of student life in elementary and secondary schools. The following review of the school and classroom environment research will focus on the shared perceptions of the students and sometimes the teachers in that environment, and how these perceptions, in turn, influence students' learning outcomes.

Weighing Objectivity and Subjectivity in Examining Environments

Methodologically, investigating subjective perceptions of classroom learning environments can be contrasted with two other major approaches to the examination of quality of student life. One approach, commonly referred to as *classroom interaction analysis* involves the direct observation and systematic coding of classroom communication patterns and events by trained outside observers (Rosenshine & Furst, 1973). Another approach to studying classroom environments that has gained popularity in recent years involves qualitative techniques variously referred to as naturalistic inquiry, case study, ethnography, and participant observation. The reader will recall from Chapter I that Walberg and Haertel (1980) have advanced the following arguments to justify the use of student perceptual measures as opposed to qualitative observational techniques when studying classroom environments: (a) quantitative paper-and-pencil measurement of perceptions does not require training observers, making it more economical; (b) perceptual techniques are based on experiences over time, whereas observational data is

restricted to relatively short time spans; (c) perceptual data allows one to pool students' reports or judgements, as opposed to relying on a single observer; (d) in many, if not most cases, students' perceptions are more important determinants of their behavior than is the competing objective reality; and (e) perceptual measures have frequently accounted for more variance in student learning outcomes than have interaction variables identified through observation. Therefore, "although objective indexes of directly observed behavior in classroom settings certainly have their place in educational research, they do not tell the whole story about complex, weighed, subjective judgements made by students and others who have an important influence on learning" (Fraser, 1986: 2).

School and Classroom Environments: Two Unnecessarily Distinct Literatures

Before proceeding to review the instruments designed to measure perceptions of educational environments, it is important to make a distinction between *classroom-level* environment and *school-level* environment. One way of understanding school-level environments is to assume that "the school environment is largely a sum of the classroom environments within the school" (Johnson & Johnson, 1979: 115). A more common way of viewing school environment, however, is to consider it as something distinct from, and more global than, classroom environment. According to Fraser (1986), whereas classroom climate might involve relationships between the teacher and his or her students, or among students, school climate might involve relationships between teachers and their teaching colleagues, department heads, and principals. Similarly, while classroom environment is usually measured in terms of either student or teacher perceptions, school environment is usually (but not exclusively) assessed in terms of teacher perceptions.

Despite their logical linkages, these two literatures have developed and remained remarkably independent. Nevertheless, the following discussion will attempt to break

away from the existing tradition of independence between these two fields, and discuss measures of both school and classroom environments.

Measures of Quality of Elementary & Secondary Student Life

Many researchers employing quantitative techniques to examine students' and teachers' perceptions of school and classroom environments have focussed their energies on constructing instruments that allow respondents to report their perceptions of the environment as they experience it. Since the early 1960s, a variety of measures with a variety of theoretical perspectives--and some with none--have emerged.

Five Popular Pioneering Instruments

The three instruments used most extensively in prior classroom-level research at the secondary school level are: (a) the Learning Environment Inventory (Anderson & Walberg, 1974; Fraser, Anderson, & Walberg, 1982); (b) the Classroom Environment Scale (Moos & Trickett, 1974; Trickett & Moos, 1973); and (c) the Individualized Classroom Environment Questionnaire (Fraser, 1981; Rentoul & Fraser, 1979). In addition, the My Class Inventory (Fisher & Fraser, 1981; Fraser, Anderson, & Walberg, 1982), a simpler, re-worked version of the Learning Environment Inventory, has been utilized in numerous studies at the elementary and junior high school levels. The most widely used instrument in school-level environment research in elementary and secondary schools is the Organizational Climate Description Questionnaire (Halpin & Croft, 1963). Table 2.1: Overview of Five Popular Pioneering Instruments Measuring the Quality of Elementary and Secondary Student Life, has been assembled to provide a brief introduction to the instruments, while more detailed descriptive information is provided in the remainder of this section.

Table 2.1:

Overview of Five Popular Pioneering Instruments Measuring the Quality of Elementary & Secondary Student Life

Instrument	Level	# of Scales	Scales			
Learning Environment Inventory (LEI)	Secondary students' perceptions	15	material environment	satisfaction	competitiveness cohesiveness friction cliqueness favoritism formality democracy	speed difficulty apathy diversity goal direction disorganization
My Class Inventory (MCI)	Elementary students' perceptions	5		satisfaction	competitiveness cohesiveness friction	difficulty
Classroom Environment Scale (CES)	Secondary students' perceptions	9	involvement affiliation teacher support	task orientation competition	order & organization rule clarity teacher control innovation	
Individualized Classroom Environment Questionnaire (ICEQ)	Secondary students' perceptions	5	personalization participation	independence investigation	differentiation	
Organizational Climate Description Questionnaire (OCDQ)	Secondary teachers' perceptions	8	disengagement hindrance esprit (morale) intimacy	aloofness production emphasis & thrust consideration		

The Learning Environment Inventory

Both the Learning Environment Inventory (LEI) and the Classroom Environment Scale, which is discussed below, are theoretically grounded in Murray's (1938) work with *environmental press*. Environmental press refers to the psychological influence or impact of an environment upon its inhabitants, and is measured by obtaining information from the inhabitants about their perceptions of the environment along a number of psychological-educational dimensions. Murray hypothesized that individuals respond differently to prominent environmental features, or press, according to their individual "needs". In other words, press perception is an individual matter. The individual describes how he or she sees the environment, and the real environment for an individual is the one he or she sees and feels, and with which he or she interacts. However, to the extent that there is generally a considerable degree of consensus with respect to environmental perception, it is possible to use this consensus as a basis for a description of dominant, general features and characteristics of the environment.

Recognized as the most popular of all secondary instruments, the LEI was developed to measure the dominant features of classroom learning environment as a part of Harvard Project Physics--a seminal research program associated with Walberg at the University of Illinois at Chicago Circle in the late 1960s. This inventory measures students' perceptions of 15 dimensions of the affective, or social domain in conventional classrooms, including: material environment, satisfaction, competitiveness, cohesiveness, friction, cliqueness, favoritism, formality, democracy, speed, difficulty, apathy, diversity, goal direction, and disorganization. Each dimension is measured by seven indicators--which take the form of statements to which respondents give Likert-type responses, ranging from strongly agree to strongly disagree. A brief explanation of each of the 15 dimensions is provided below.

To classify the individual scales of the LEI, Anderson (1982) found it useful to employ Taguiri's (1968) climate taxonomy. According to Taguiri, the four dimensions of

an environment include: (a) *ecology*, the physical and material aspects; (b) *milieu*, the social dimension concerned with the presence of persons or groups; (c) *social system*, the social dimension concerned with the patterned relationships of persons and groups; and (d) *culture*, the social dimension concerned with belief systems, values, cognitive structures, and meaning.

Material environment is the sole measure of ecology and it taps the availability of adequate books, equipment, space, and lighting. Similarly, *satisfaction*, which determines the extent of enjoyment of classwork, is the only measure of milieu. In contrast, seven scales of the LEI gauge the social system: competitiveness, cohesiveness, friction, cliqueness, favoritism, formality, and democracy. The *competitiveness* scale measures the emphasis on students competing with each other, while *cohesiveness* probes the extent to which students know, help, and are friendly towards each other. The *friction* scale examines the amount of tension and quarrelling among students, and on a related note, the *cliqueness* scale measures whether some students refuse to mix with the rest of the class. *Favoritism* is the extent to which the teacher treats certain students more favourably than others, and *formality* is the extent to which behavior within the class is guided by formal rules. Finally, the *democracy* scale measures students' ability to share equally in decision-making related to the class. The final six scales of the LEI can be categorized within the culture dimension. They include: speed, difficulty, apathy, diversity, goal direction, and disorganization. The extent to which class work is covered quickly is known as *speed*, while the extent to which students find difficulty with the work of the class is known as *difficulty*. The *apathy* scale reflects whether or not students feel affinity with class activities. *Diversity* probes whether or not differences in students' interests exist and are provided for, and *goal direction* determines the degree to which there is goal clarity in the class. The final dimension of *disorganization* measures the extent to which classroom activities are confusing and poorly organized.

The My Class Inventory

The My Class Inventory (MCI), which is a simplification of the LEI suitable for 8- to 12-year-olds, also measures students' perceptions of the affective domain of conventional classrooms. The fact that this instrument requires a significantly lower level of reading ability adds to its suitability for younger audiences at the primary school level. The MCI differs from the LEI in three important ways. First, in order to minimize fatigue among younger children, the MCI contains only 5 of the LEI's 15 scales including: cohesiveness, friction, satisfaction, difficulty, and competitiveness. Second, item wording has been simplified to enhance readability. Third, the LEI's 4-point response format has been reduced to a 2-point (Yes-No) response format. See Figure 2.1: My Class Inventory.

Figure 2.1:

My Class Inventory [a]

DIRECTIONS
This is not a test. The questions are to find out what your class is actually like.
Each sentence is meant to describe what your actual classroom is like. Draw a circle around:

Yes	if you AGREE with the sentence
No	if you DISAGREE with the sentence

Please answer all questions. If you change your mind about an answer, just cross it out and circle the new answer.

1.	The pupils enjoy their schoolwork in my class.	Yes	No
2.	Children are always fighting with each other.	Yes	No
3.	Children often race to see who can finish first.	Yes	No
4.	In our class the work is hard to do.	Yes	No
5.	In my class everybody is my friend.	Yes	No
6.	Some pupils are not happy in class.	Yes	No
7.	Some of the children in our class are mean.	Yes	No
8.	Most children want their work to be better than their friend's work.	Yes	No
9.	Most children can do their schoolwork without help.	Yes	No
10.	Some people in my class are not my friends.	Yes	No
11.	Children seem to like the class.	Yes	No
12.	Many people in our class like to fight.	Yes	No
13.	Some pupils feel bad when they don't do as well as the others.	Yes	No
14.	Only the smart pupils can do their work.	Yes	No
15.	All pupils in my class are close friends.	Yes	No

16. Some of the pupils don't like the class.	Yes	No
17. Certain pupils always want to have their own way.	Yes	No
18. Some pupils always try to do their work better than the others.	Yes	No
19. Schoolwork is hard to do.	Yes	No
20. All of the pupils in my class are like one another.	Yes	No
21. The class is fun.	Yes	No
22. Children in our class fight a lot.	Yes	No
23. A few children in my class want to be first all of the time.	Yes	No
24. Most of the pupils in my class know how to do their work.	Yes	No
25. Children in our class like each other as friends.	Yes	No

[a] From Fraser (1986: 196-197).

The Classroom Environment Scale

At the same time as the LEI was being developed in Illinois, Moos's world-renowned social climate research on psychiatric hospitals and correctional institutions at Stanford University led to the development of the Classroom Environment Scale (CES). The CES is one of a set of nine[4] separate, but somewhat similar instruments, called the Social Climate Scales (Moos, 1974). This scale measures students' perceptions of nine dimensions of conventional classrooms using a 90 item social climate scale in a true-false response format. The dimensions measured by this scale include: involvement, affiliation, teacher support, task orientation, competition, order and organization, rule clarity, teacher control, and innovation.

In addition to the fact that the CES is theoretically grounded in Murray's (1938) work on environmental press, each of the nine dimensions included in this instrument were chosen to represent elements of the three general categories proposed by Moos (1979) for conceptualizing the individual dimensions characterizing diverse psychosocial environments. These three categories include: (a) *relationship dimensions*, nature and

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[4] The other eight instruments which are a part of the Social Climate Scales include: the University Residence Environment Scale (URES); the Ward Atmosphere Scale (WAS) for hospitals; the Community-Oriented Programs Environment Scale (COPES); the Correctional Institutions Environment Scale (CIES); the Military Company Environment Scale (MCES); the Family Environment Scale (FES); the Group Environment Scale (GES) for social and therapeutic groups; and the Work Environment Scale (WES).

intensity of personal relationships; (b) *personal development dimensions*, basic directions along which personal growth and self-enhancement tend to occur; and (c) *system maintenance and system change dimensions*, extent to which the environment is orderly, clear in expectation, maintains control, and is responsive to change.

Involvement, affiliation, and teacher support represent the first category--relationship dimensions. The *involvement* scale describes the extent to which students have an attentive interest, participate in discussions, do additional work, and enjoy the class. *Affiliation* measures the degree to which students help each other, get to know each other easily, and enjoy working together. The *teacher support* dimension measures whether or not the teacher helps, befriends, trusts, and shows genuine interest in students. To tap the dimension of personal development, the task orientation and competition scales were devised. The degree to which it is important to complete planned activities and to stay on the subject matter measures *task orientation*; and in terms of *competition*, the question can be asked whether or not students compete with each other for grades and recognition. The final four dimensions (order and organization, rule clarity, teacher control, and innovation) relate to the concept of system maintenance and change. The *order and organization* dimension examines whether there is an emphasis on students behaving in an orderly, quiet, and polite manner, and on the overall organization of classroom activities; while the dimension of *rule clarity* measures whether rules are clear, students know the consequence of breaking rules, and the teacher deals consistently with students who break rules. Next, the extent to which rules are enforced and rule violations are punished is defined as *teacher control*. Finally, *innovation* draws out whether or not the teacher plans new, unusual, and varying activities and techniques, and encourages students to contribute to classroom planning and to think creatively. See Figure 2.2: Classroom Environment Scale.

Figure 2.2:

Classroom Environment Scale [a]

DIRECTIONS

This questionnaire contains statements about practices which could take place in this classroom.
You will be asked how well each statement describes what your class is actually like.
There are no 'right' or 'wrong' answers. Your opinion is what is wanted.
Think about how well each statement describes what your actual classroom is like. Draw a circle around:

True	if it is TRUE or MOSTLY TRUE that the practice actually takes
False	if it is FALSE or MOSTLY FALSE that the practice actually takes

Be sure to give an answer for all questions. If you change your mind about an answer, just cross it out and circle another.
Some statements in this questionnaire are fairly similar to other statements.
Don't worry about this. Simply give your opinion about all statements.

1.	Students put a lot of energy into what they do here.	True	False
2.	Students in this class get to know each other really well.	True	False
3.	This teacher spends very little time just talking with students.	True	False
4.	We often spend more time discussing outside student activities than class-related material.	True	False
5.	This is a well-organized class.	True	False
6.	There is a clear set of rules for students to follow.	True	False
7.	Students daydream a lot in this class.	True	False
8.	Students in this class aren't very interested in getting to know other students	True	False
9.	The teacher takes a personal interest in students.	True	False
10.	Getting a certain amount of classwork done is very important in this class.	True	False
11.	Students are almost always quiet in this class.	True	False
12.	Rules in this class seem to change a lot.	True	False
13.	Students are often "clockwatching" in this class.	True	False
14.	A lot of friendships have been made in this class.	True	False
15.	The teacher is more like a friend than an authority.	True	False
16.	Students don't do much work in this class.	True	False
17.	Students fool around a lot in this class.	True	False
18.	The teacher explains what will happen if a student breaks a rule.	True	False
19.	Most students in this class really pay attention to what the teacher is saying.	True	False
20.	It's easy to get a group together for a project.	True	False
21.	The teacher goes out of his/her way to help students.	True	False
22.	This class is more a social hour than a place to learn something.	True	False
23.	This class is often very noisy.	True	False
24.	The teacher explains what the rules are.	True	False

[a] From Fraser (1986: 194-195).

The Individualized Classroom Environment Questionnaire

Notwithstanding the wide application and proven value of the LEI and CES, these instruments exclude some aspects of classroom environment that are particularly relevant in non-conventional classroom settings. Developed in 1979, the Individualized Classroom Environment Questionnaire (ICEQ) is a 50 item scale that measures students' perceptions of five dimensions in "open", or enquiry-based classrooms, characterized by

individualized learning programs. Each item is responded to on a 5-point scale with the alternatives of almost never, seldom, sometimes, often, and very often. The ICEQ can be used either on its own in studies focusing exclusively on individualized settings or in conjunction with an instrument such as the LEI or CES to provide coverage of a broader range of classroom characteristics. The five dimensions of this scale include: personalization, participation, independence, investigation, and differentiation.

Like the CES, the ICEQ's dimensions were chosen to include at least one scale classifiable as each of Moos's (1979) three general theoretical categories for conceptualizing environments. While personalization and participation examine the relationship dimension, and independence and investigation measure personal development, only the one dimension of differentiation describes system maintenance and change.

The *personalization* scale describes the extent to which there is an emphasis on opportunities for individual students to interact with the teacher, and on concern for the personal welfare and social growth of the individual. On a related note, *participation* measures the degree to which students are encouraged to participate rather than be passive listeners. On the subject of personal development, the *independence* dimension asks whether students are allowed to make decisions and have control over their own learning and behavior; and, the *investigation* dimension describes the degree to which there is an emphasis on the skills and processes of inquiry, and their use in problem-solving and investigation. The final dimension, *differentiation*, examines the extent to which there is an emphasis on the selective treatment of students on the basis of ability, learning style, interests, and rate of working. See Figure 2.3: Individualized Classroom Environment Questionnaire.

Figure 2.3:

Individualized Classroom Environment Questionnaire [a]

DIRECTIONS

This questionnaire contains statements about practices which could take place in this classroom.
You will be asked how often each practice actually takes place.
There are no 'right' or 'wrong' answers. Your opinion is what is wanted.
Think about how well each statement describes what your actual classroom is like. Draw a circle around:

1 if the practice actually takes place	ALMOST NEVER
2 if the practice actually takes place	SELDOM
3 if the practice actually takes place	SOMETIMES
4 if the practice actually takes place	OFTEN
5 if the practice actually takes place	VERY OFTEN

Be sure to give an answer for all questions. If you change your mind about an answer, just cross it out and circle another.
Some statements in this questionnaire are fairly similar to other statements.
Don't worry about this. Simply give your opinion about all statements.

	Almost Never	Seldom	Some-times	Often	Very Often
1. The teacher talks with each student.	1	2	3	4	5
2. Students give their opinions during discussions.	1	2	3	4	5
3. The teacher decides where students sit.	1	2	3	4	5
4. Students find out the answers to questions from textbooks rather than from investigations.	1	2	3	4	5
5. Different students do different work.	1	2	3	4	5
6. The teacher takes a personal interest in each student.	1	2	3	4	5
7. The teacher lectures without students asking or answering questions.	1	2	3	4	5
8. Students choose their partners for group work.	1	2	3	4	5
9. Students carry out investigations to test ideas.	1	2	3	4	5
10. All students in the class do the same work at the same time.	1	2	3	4	5
11. The teacher is unfriendly to students.	1	2	3	4	5
12. Students' ideas and suggestions are used during classroom discussion.	1	2	3	4	5
13. Students are told how to behave in the classroom.	1	2	3	4	5
14. Students carry out investigations to answer questions coming from class discussions.	1	2	3	4	5
15. Different students use different books, equipment and materials.	1	2	3	4	5
16. The teacher helps each student who is having trouble with the work.	1	2	3	4	5
17. Students ask the teacher questions.	1	2	3	4	5
18. The teacher decides which students should work together.	1	2	3	4	5
19. Students explain the meanings of statements, diagrams and graphs.	1	2	3	4	5
20. Students who work faster than others move on to the next topic.	1	2	3	4	5
21. The teacher considers students' feelings.	1	2	3	4	5

22. There is classroom discussion.	1	2	3	4	5
23. The teacher decides how much movement and talk there should be in the classroom.	1	2	3	4	5
24. Students carry out investigations to answer questions which puzzle them.	1	2	3	4	5
25. The same teaching aid (e.g., blackboard or overhead projector) is used for all students in the class.	1	2	3	4	5

[a] From Fraser (1986: 190-191).

The Organizational Climate Description Questionnaire

Relying heavily on earlier work on the organizational climate in business contexts, the Organizational Climate Description Questionnaire (OCDQ) was developed by Halpin and Croft in 1963. Unlike the instruments described above, this questionnaire focuses on the institutional school-level climate. Therefore, it allows researchers to measure teachers' (as opposed to students') perceptions of either elementary or secondary school climates. The OCDQ has been used in over 200 studies in at least eight different countries and has achieved something of bandwagon status in research in the field of educational administration (Thomas, 1976). It contains 64 items, of 4-point response format, that measure teachers' perceptions of eight factor-analytically derived dimensions. Four of these dimensions pertain to teachers' behavior and are called *disengagement*, *hindrance*, *esprit* (i.e., morale), and *intimacy*, while the other four dimensions pertain to the principal's behavior and are called *aloofness*, *production*, *emphasis and thrust*, and *consideration*. Furthermore, Halpin and Croft have suggested a method by which profiles of OCDQ scores can be used to classify schools into six climate types: open, autonomous, controlled, familiar, paternal, and closed.

This instrument has also formed the basis for the development of some new factor-analytic school environment scales for use in secondary schools in England (Finlayson, 1973) and Australia (Deer, 1980; Finlayson & Deer, 1979). Deer's instrument, for example, has two scales measuring student perception of teachers and other students (teacher and peer concern for students, and teacher and peer control of

students), four scales measuring teacher perception of the teacher group (job orientation, school organization, personal relations, and communication), three scales measuring teacher perception of head of department behavior (participatory management, awareness, and professional concern for staff) and four scales measuring teacher perception of the school principal's behavior (participatory management, sensitivity, professional consideration for staff, and personal consideration for staff).

Even though the LEI, MCI, CES, ICEQ, and OCDQ are the most popular, many other scales have been devised to measure various dimensions of quality of student life in primary and secondary educational institutions--by examining both students' and teachers' perceptions. Therefore, attention in the following sections turns to other classroom- and school-level environment instruments that have been designed in recent years. As noted earlier, the classification of a particular scale as either a classroom-level or school-level instrument, is quite often an arbitrary one.

Other Classroom-Level Environment Instruments

A review of additional instruments that measure perceptions of psychosocial environment at the classroom-level is provided by Fraser (1986: 57-64). These instruments include: the Classroom Atmosphere Scale (Silbergeld, Koenig, & Manderscheid, 1975); the Class Activities Questionnaire (Steele, House, & Kerins, 1971); the Learning Preference Scale: Students and the Classroom Learning Atmosphere Scale Secondary (Owens & Straton, 1977, 1980); the Treatment Perception Scale (Stayrook, Corno, & Winne, 1978); the Transmission-Interpretation Scale (Gardner & Taylor, 1980); Our Class and Its Work (Eash & Waxman, 1983); and the Barclay Classroom Assessment System (Barclay, 1974, 1984).

The majority of these other classroom-level instruments are based on the Learning Environment Inventory, the Classroom Environment Scale, or the Individualized

Classroom Environment Scale, and they do not represent a significant departure from the pioneering measures' theoretical premises or operationalized dimensions. For example, the Classroom Atmosphere Scale (CAS) measures student or teacher perceptions of 12 dimensions of secondary classroom environment. Like the CES, all of the dimensions of the CAS are classifiable into Moos's three dimensions of psychosocial environments, and 6 of the CAS's 12 dimensions are exactly the same those in the CES. Therefore, only those instruments that represent a significant departure from the pioneers will be discussed under this heading.

First, the Class Activities Questionnaire (CAQ) measures student or teacher perceptions of the environment of secondary school classrooms using four major scales and sixteen subscales. A total of 25 items of 4-point response format are used to tap what mental and emotional demands are made of students. The first two major scales of the CAQ, namely, *lower thought processes* (subscales of memory, translation, and interpretation) and *higher thought processes* (subscales of application, analysis, synthesis, and evaluation) are based on Bloom's taxonomy of cognitive objectives (Bloom et al., 1956). The two other major scales are the classroom focus (discussion, test-grade stress, and lecture) and the affective aspects of classroom climate (enthusiasm, independence, divergence, humor, teacher talk, and homework). What characterizes this instrument as distinct from the LEI, CES, and ICEQ is that it focuses on the cognitive domain of student life, in contrast with the former measures' focus solely on affective aspects of student life.

The Treatment Perception Scale, Transmission-Interpretation Scale, and Our Class and Its Work also make an unique contribution to the literature. Each one of the three instruments measures the student perception of some teacher behaviors, as opposed to solely class climate. For example, Our Class and Its Work (OCIW) measures eight teacher behaviors identified by Rosenshine and Furst (1973) to be empirically linked with student learning outcomes. These dimensions include: (a) *didactic instruction*, extent to

which the teacher controls instruction; (b) *enthusiasm, feedback, instructional time*, amount of time that students spend engaged in learning; (c) *opportunity to learn*, how well the teacher ensures that students cover the content; (d) *pacing*, appropriateness of the difficulty and speed of the work; (e) *structuring comments*, whether the teacher provides overviews at the beginning and end of the lesson; and (f) *task orientation.*

Other School-Level Environment Instruments

At the beginning of this section it was noted that whereas classroom climate usually is assessed in terms of either student or teacher perceptions, school environment is typically (but not exclusively) measured in terms of teacher perceptions.[5] The following discussion will provide a brief overview of other school-level environment instruments; however, only those instruments that represent a significant departure from the pioneers will be presented in detail.

Anderson's (1982: 374-376) review of six instruments intended to measure the quality of school environments include the following instruments: the High School Characteristics Index (Pace & Stern, 1958; Stern, 1970); the Elementary School Environment Survey (Sinclair, 1970); the School Survey (Coughlan, 1970); the Pupil Control Ideology and Pupil Control Behavior (Willower, Eidell, & Hoy, 1967; Willower, 1977); the School Description Inventory (Anderson, 1970; Anderson & Tissier, 1973);

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[5] Moos's (1974) Social Climate Scales provide a good illustration of this distinction between climate types. Whereas the CES measures student perceptions of classroom-level environment, a completely separate instrument called the Work Environment Scale (WES) (Moos, 1981) is potentially applicable for measuring teacher perceptions of school-level environment. Although the WES was designed for use in any work milieu, its 10 dimensions of work environment seem well suited to describing salient features of the teacher's school-level environment. The 10 scales in the WES consist of three of Moos's (1979) relationship dimensions (involvement, peer cohesion, and staff support), two personal development dimensions (autonomy and task orientation), and five system maintenance and system change dimensions (work pressure, clarity, control, innovation, and physical comfort).

and the Quality of School Life Scales (Epstein, 1981; Epstein & McPartland, 1976; Williams & Batten, 1981).

First, the School Description Inventory (SDI) is unique in the sense that it measures a teacher's perception of the bureaucratic characteristics of secondary school environments. Specifically, this instrument measures six dimensions of bureaucracy: hierarchy of authority, rules, procedural specifications, impersonality, technical competence, and specialization. The Quality of School Life Scales also make a significant contribution to the school and classroom climate measurement literature. Their theoretical bases, conceptualizations, and operationalizations are outlined below.

The Quality of School Life Scale developed by Epstein and McPartland was the first instrument to generalize from the adult quality of life literature to the climate of both elementary and secondary schools. A student's affective attitude toward school (or well-being in school) is measured using a 27 item questionnaire using three dimensions of student reactions: satisfaction with school in general, commitment to classwork, and attitudes toward teachers. Thus, a student's attitude toward school is believed to be affected by both the informal and formal aspects of school, in terms of social and task-related experiences, as well as the relationships with authority figures and peers.

Williams and Batten (1981) also developed a Quality of School Life Scale to measure affective quality of student life, and its development began with the same starting point as that of Epstein and McPartland--the adult quality of life literature. It is important to note that while the social scientists who created the vast majority of the instruments described up to this point paid scant attention to theory in the development of their instruments, Williams and Batten provide a well developed theoretical basis for their scale. Williams and Batten's scale will be described at length because, as noted in the preceding chapter, it provides the basis for the affective domain of quality of university student life in Roberts and Clifton's Quality of University Student Life Questionnaire. The main thrust of Williams and Batten's argument is this--"students who are happier,

more enthusiastic, more engaged in life within schools, are, *ceteris paribus*, likely to learn more and perform better" (1981: 1).

Employing an individualist orientation, Williams and Batten define quality of life as subjective well-being, or subjectively known and evaluated aspects of life. To expand upon this definition, they employed Bradburn and Caplovitz's (1969) argument that individuals have a number of different experiences each day--sometimes they are all positive, sometime all negative, but mostly they are a mixture of both. Applied to educational contexts, the sum of these experiences can be expressed as three global dimensions of the well-being of students: (a) *general affect*, overall feelings of well-being or satisfaction with school as a whole; (b) *positive affect*, a feeling state tapped by questions about "good" feelings experienced in school over the past week; and (c) *negative affect*, a feeling state expressed in reactions to questions about loneliness, boredom, and depression experienced in school. Campbell et al. (1976) added to Bradburn and Caplovitz's work on the three elements of global quality of life by adding a fourth dimension of well-being: satisfaction with specific domains of life activity. To apply this idea to the specific domain of education, Williams and Batten capitalized on the theory of schooling developed by Spady and Mitchell (1979). Therefore, in addition to the above three global dimensions, four specific dimensions of the quality of life in schools were added: *status*, *identity*, *adventure*, and *opportunity*.

Spady and Mitchell drew on both structural functionalist and symbolic interactionist schools of sociological theory to construct this model. Schools were envisioned as action systems for integrating individual expectations for personal fulfillment, or *student experiences*, with *societal expectations* for the schools to develop the *structures* necessary to provide for the nurture of responsibility, integration, personal development, and competency among students (Mitchell & Spady, 1977: 41). First, schools make use of the structure of supervision so that students acquire a sense of the societal expectation of social responsibility (subordinating personal interests to the

general welfare). This is attractive to students to the extent that it provides a feeling that the attainment of *status* as a student, with the attendant rights and responsibilities, is possible within the supervision structures. Secondly, schools employ the structure of socialization so that they can meet the societal expectation of socially integrating students into society. This is attractive to students to the extent that it provides a feeling that the various social integration processes will allow for the development of personal *identity*, or self-awareness, in relation to society. Thirdly, by utilizing the structure of instruction, schools are able to satisfy the societal expectation of personal development in students. This is pleasing to students to the extent that it provides feelings of *adventure* in learning--an experience that makes learning intrinsically rewarding and therefore should lead to self motivation. Finally, schools developed the process of certification, or performance standards, so that students become technically competent in their work, which is a benefit to society. This is also attractive to students to the extent that it provides feelings that the competencies developed will lead to real and desirable *opportunity* in the future (Mitchell & Spady, 1977: 6).

In sum, Williams and Batten proposed a theoretical model of affective quality of elementary and secondary school life that consisted of seven dimensions: positive affect, negative affect, general affect, status, identity, adventure, and opportunity. Empirical analyses of the original model, however, led Williams and Batten to reconfigure their model in terms of six, as opposed to seven, dimensions: positive affect, negative affect, status, identity, opportunity, and teachers. First, *positive affect* refers to students' perceptions of their experiences in university as a whole, in terms of their happiness or positive feelings; conversely, *negative affect* pertains to the intensity and frequency with which students are consumed by negative feelings such as depression and restlessness. *Status* relates to the sense of well-being that students experience from having the confidence and respect of their peers, while *identity* taps students' recognition of their mutual interdependence as parts of an integrated institution. *Opportunity* concerns the

feelings of competence students gain from having opportunities to demonstrate their abilities and be assessed on their competencies. Finally, *teachers*, refers to the sense of well-being that students experience from having supportive and helpful relationships with their teachers, both inside and outside of the classroom. A recent 71 item version of the questionnaire is contained in Figure 2.4: Quality of School Life Questionnaire. Each item is responded to using the four categories of definitely agree, mostly agree, mostly disagree, and definitely disagree.

Figure 2.4:

Quality of School Life Questionnaire [a]

Each item on the next several pages say that **School Is A Place Where** some particular thing happens to you or you feel a particular way. We want you to say whether you **Definitely Agree**, **Mostly Agree**, **Mostly Disagree**, or **Definitely Disagree** with the items.

Please read each item carefully and tick the answer which best describes how you feel.
Don't forget that you have to put **'School Is A Place Where . . .'** in front of each item for it to make sense, e.g.,
'School Is A Place Where I really like to go' (item 11).

All the answers you give are confidential.

SCHOOL IS A PLACE WHERE . . .

	Definitely Agree	Mostly Agree	Mostly Disagree	Definitely Disagree
1. I have good friends.	☐	☐	☐	☐
2. People know they can depend on me.	☐	☐	☐	☐
3. I know how to cope with the work.	☐	☐	☐	☐
4. Teachers are genuinely interested in what I do.	☐	☐	☐	☐
5. I have learned how to find whatever information I need.	☐	☐	☐	☐
6. I am thought of as a person who matters.	☐	☐	☐	☐
7. I feel bored.	☐	☐	☐	☐
8. I act in a responsible way.	☐	☐	☐	☐
9. Teachers are fair and just.	☐	☐	☐	☐
10. I know what my strengths and weaknesses are.	☐	☐	☐	☐
11. I really like to go.	☐	☐	☐	☐
12. Teachers take a personal interest in helping me with my work.	☐	☐	☐	☐
13. I feel I belong.	☐	☐	☐	☐
14. Mixing with other people helps me to understand myself.	☐	☐	☐	☐

15. Teachers recognize any extra effort I make in my work.
16. I have learned things that will be useful to me.
17. I feel important.
18. I learn to get along with other people.
19. Teachers help me to do my best.
20. People have confidence in me.
21. Teachers treat me fairly in class.
22. I try to do what is expected of me.
23. I feel proud to be a student.
24. I like to do extra work in the subjects that interest me.
25. People come to me for help.
26. Teachers encourage me to express my opinions.
27. I feel lonely.
28. Learning is easy for me.
29. I am interested in the work we do in class.
30. I can learn whatever I need to know.
31. I feel successful.
32. Other students are very friendly.
33. I like to learn new things.
34. I feel restless.
35. I know that people think a lot of me.
36. I feel I have become a worthwhile person.
37. Teachers take notice of me in class.
38. Teachers give me the marks I deserve.
39. I feel I am a reliable person.
40. I feel proud of myself.
41. People look up to me.
42. I am trusted to work on my own.
43. I feel depressed.
44. I know I can reach a satisfactory standard in my work.
45. Other students accept me as I am.
46. I feel good about things.
47. I know the sorts of things I do well.
48. I can talk to teachers about the way they mark my work.
49. I get excited about things.
50. I learn a lot about myself.
51. Teachers listen to what I say.
52. I feel happy.
53. I try to look after the interests of other students.

54. I am known by a lot of people. ☐ ☐ ☐ ☐
55. I find that learning is a lot of fun. ☐ ☐ ☐ ☐
56. I get enjoyment from being there. ☐ ☐ ☐ ☐
57. I have learned to see other people's points of view. ☐ ☐ ☐ ☐
58. Other students listen to what I say. ☐ ☐ ☐ ☐
59. I feel confident. ☐ ☐ ☐ ☐
60. I get satisfaction from the school work I do. ☐ ☐ ☐ ☐
61. I feel that things go my way. ☐ ☐ ☐ ☐
62. Teachers are friendly to me in class. ☐ ☐ ☐ ☐
63. I get to know myself better. ☐ ☐ ☐ ☐
64. I am treated with respect. ☐ ☐ ☐ ☐
65. I know I can do well enough to be successful. ☐ ☐ ☐ ☐
66. I get upset. ☐ ☐ ☐ ☐
67. I can question the things that teachers say about my work. ☐ ☐ ☐ ☐
68. I can learn what I need to get by in life. ☐ ☐ ☐ ☐
69. I feel great. ☐ ☐ ☐ ☐
70. I have learned to accept other people as they are. ☐ ☐ ☐ ☐
71. Teachers treat all students equally. ☐ ☐ ☐ ☐

[a] From Williams & Batten (1981: 58-62).

This section has examined the instruments measuring the quality of student life at the elementary and secondary levels. Five popular pioneering instruments (the Learning Environment Inventory, the My Class Inventory, the Classroom Environment Scale, the Individualized Classroom Environment Questionnaire, and the Organizational Climate Description Questionnaire) were described in detail, followed by 13 more recently developed tools. At this point, it is important to note that only one of the measures--Williams and Batten's Quality of School Life Scales--is grounded in prominent sociological theory.

With the review of instruments now complete, discussion will turn to studies that have attempted to determine the impact that young students' perceptions of life in their classrooms and schools have on their behavioral, attitudinal, and cognitive learning outcomes.

The Impact of Quality of Elementary & Secondary Student Life on Learning

According to Fraser (1980), the strongest tradition of classroom environment research has involved investigation of the predictability of students' cognitive, affective, and behavioral outcomes from their perceptions of psychosocial characteristics of their classrooms. By reviewing over 50 studies of environment-outcome associations in both primary and secondary settings, Fraser (1985, 1986) provides convincing and consistent support for the predictive validity of student perceptions in accounting for appreciable amounts of variance in learning outcomes, often beyond that attributable to student background characteristics. Furthermore, this pattern has been replicated in numerous countries (including some developing countries), and for a number of classroom- and school-level environment instruments.

An Ambitious Meta-Analysis

The pattern of findings described above is convincingly illustrated by Haertel, Walberg, and Haertel's (1981) ambitious meta-analysis. Using rigorous random sampling procedures, the researchers selected a sample of 12 studies[6] examining the link between socio-psychological environments and learning from over 100 published internationally by that time. Their subsequent analysis was based on 734 correlations generated by these 12 studies involving 17,805 students in 823 classrooms and eight subject areas in four nations. See Table 2.2: Haertel et al.'s Twelve Studies on the Link Between Elementary & Secondary Classroom Environments & Student Learning Outcomes. Specifically, the researchers attempted to predict end-of-course cognitive, affective, and behavioral learning from mid-course social-psychological perceptions, with and without statistical control for beginning-of-course measures and ability. Due to the fact that the studies employed distinct operationalizations of learning outcomes, the researchers recoded

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[6] Ten of the 12 studies employed the Learning Environment Inventory. In addition, the majority of these studies will be discussed in detail in later sections of this chapter.

criterion learning outcomes into one of three categories. Types of *cognitive* measures included conventional multiple-choice achievement tests, tests of understanding, critical thinking, and tests of formal reasoning. *Attitudinal* criteria included instruments such as interests measures, motivation tests, and self-concept tests. *Behavioral* criterion measures included self-report activity inventories and absence rates.

Table 2.2:

Haertel et al.'s Twelve Studies on the Link Between Elementary & Secondary Classroom Environments & Student Learning Outcomes [a]

Study	Number of correlations	Number of classes	Number of students
Bardsley (1976)	7	30	374
Fraser (1979)	11	153	541
Moos & Moos (1978)	10	19	375
Perkins (1976)	5	108	3700
Talmage & Walberg (1978)	5	59	1600
Tisher & Power (1975)	240	20	315
Walberg & Anderson (1968)	22	76	2600
Walberg & Anderson (1972)	150	64	1600
Walberg, Singh & Rasher (1977)	60	150	3000
Subtotal	*510*	*679*	*14105*
Walberg (1969a)*	84	144	3700
Walberg (1969b)*	84	144	3700
Walberg (1972)*	56	144	3700
Subtotal	*224*	*144*	*3700*
Total	**734**	**823**	**17805**

[a] From Haertel, Walberg & Haertel (1981: 29).

* Three studies (Walberg, 1969 a & b, 1972) analyzed a single data set to explore predictability across units of analysis and other methodological variations.

Their conclusions revealed that all three learning outcomes consistently were: positively associated with classroom environment variables such as cohesiveness, satisfaction, task difficulty, formality, goal direction, democracy, and the material environment; and negatively associated with variables such as friction, cliqueness, apathy, and disorganization.[7]

Both before and after Haertel et al.'s historic meta-analysis, links between students' learning outcomes and the nature of the classroom environment have emerged in studies around the world.

A Review of the International Research

This section will provide an overview of the comprehensive prior research into the effects of classroom psychosocial environment on students' cognitive, attitudinal, and behavioral learning outcomes. The following discussion incorporates a deliberate attempt to describe notable details of each study's sample, unit of statistical analysis, control for background variables, and methods of data analysis.

In 1986, Barry Fraser undertook a comprehensive review of studies examining the associations between environment and student outcomes. His work yielded an extensive summary table that is reproduced in Table 2.3: Associations Between Elementary & Secondary Student Classroom Environments & Student Learning Outcomes. This table is divided into six separate subsections according to the instrument employed: the LEI, MCI, CES, ICEQ, other instruments, and studies in developing countries. Due to the large volume of work done in this area, the following discussion will concentrate on the descriptive details and conclusions of only those studies that have used the LEI,

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[7] While positive learning environments and positive learning outcomes appear to go together, their causal relation to learning is plausible, but unproven by this meta-analytical study.

Table 2.3:

Associations Between Elementary & Secondary Student Classroom Environments & Student Learning Outcomes [a]

Study	Outcome Measures	Sample
Studies Involving the Learning Environment Inventory		
Anderson & Walberg (1968); Walberg & Anderson (1968); Anderson (1970); Walberg (1969a,b, 1972)	Selected from: achievement; understanding of nature of science; science processes; participation in physics activities; science interest; attitudes	Various samples (maximum of 144 classes) of senior high school physics students mainly in USA, but with some in Canada
Walberg & Anderson (1972)	Examination results	1,600 Grade 10 & 11 students in 64 classes in Montreal, Quebec, Canada
Lawrenz (1976)	Science attitudes	238 senior high school science classes in midwest USA
Fraser (1978, 1979)	Inquiry skills; attitudes; understanding of nature of science	531 students in 20 Grade 7 science classes in Melbourne, Australia
Power & Tisher (1975, 1979)	Achievement; attitudes; satisfaction	315 junior high school students in 20 classes in Melbourne, Australia
Hofstein et al. (1979)	Attitudes	400 Grade 11 students in 12 chemistry classes in Israel
O'Reilly (1975)	Achievement	48 Grade 9 & 10 mathematics classes in 12 schools in Ontario, Canada
Haladyna, Olsen & Shaughnessy (1982); Haladyna, Shaughnessy & Redsun (1982a,b); Haladyna, Shaughnessy & Shaughnessy (1983)	Attitudes	5,304 science, mathematics & social studies students n 277 Grade 4, 7 & 9 classes in Oregon, USA
Cort (1979)	Achievement & attitude criteria	81 Grade 5 & 6 social studies classes in 76 schools in states in USA

Study	Outcome Measures	Sample
Studies Involving the My Class Inventory		
Talmage & Walberg (1978)	Reading achievement	1,600 primary school students in 60 classes in Illinois, USA
Fraser & Fisher (1982a,c)	Inquiry skills; understanding of nature of science; attitudes	2,305 Grade 7 science students in 100 classes in Tasmania, Australia
Payne et al. (1974-75); Ellett et al. (1977); Ellett & Walberg (1979)	Achievement; school attendance	6,151 Grade 4 students in 89 schools in Georgia, USA
Fraser & O'Brien (1985)	Word knowledge; comprehension	758 Grade 3 students in 32 classes in Sydney, Australia
Studies Involving the Classroom Environment Scale		
Trickett & Moos (1974)	Satisfaction & mood criteria	608 students in 18 classes in USA
Moos & Moos (1978)	Absences; grades	19 high school classes in one school in USA
Moos (1979)	Indexes of student reactions	241 secondary school classes in USA
Fisher & Fraser (1983)	Inquiry skills; attitudes	116 Grade 8 & 9 science classes throughout Tasmania, Australia
Martin-Reynolds & Reynolds (1983)	Classroom robustness	Ohio, USA
Galluzi et al. (1980)	Psychological outcomes	414 Grade 5 students in USA
Humphrey (1986)	Self-control	750 Grade 4 & 5 children in South Africa
Wright & Cowen (1982)	Mood; achievement; popularity; adjustment	511 Grade 5 & 6 students & their 23 teachers in USA

Study	Outcome Measures	Sample
Studies Involving the Individualized Classroom Environment Questionnaire		
Rentoul & Fraser (1980)	Inquiry skills; enjoyment	285 junior high school students in 15 classes in Sydney, Australia
Wiestra (1984)	Attitudes; achievement	398 15-16 year-old students in 9 classes in the Netherlands
Fraser (1981); Fraser & Butts (1982)	Attitudes	Maximum of 712 students in 30 junior high school science classes in Sydney, Australia
Fraser, Nash & Fisher (1983)	Anxiety	116 Grade 8 & 9 science classes throughout Tasmania, Australia
Fraser & Fisher (1982b)	Inquiry skills; attitudes	116 Grade 8 & 9 science classes throughout Tasmania, Australia
Studies Involving Other Instruments		
Kelly (1980)	Achievement	41,657 students in 1,735 schools in 14 developed countries involved in an IEA science study
Johnson et al. (1981); Johnson et al. (1984); Slavin (1983a,b)	Different studies included: achievement; cross-ethnic relationships; cross-handicapped relationships	Various samples involved in studies of cooperative learning strategies especially in USA
Eash & Waxman (1983)	Reading	762 Grade 4 & 5 students in 36 classes in Chicago, USA
Talton (1983)	Attitude; achievement	1,456 Grade 10 biology students in 70 classes in 4 schools in North Carolina, USA
Perkins (1978)	Basic skills	3,703 Grade 4 students in 42 elementary schools in a south east state in USA

Study	Outcome Measures	Sample
Brookover & Schneider (1975); Brookover et al. (1978, 1979)	Achievement	8,078 Grade 4 & 5 students in Michigan, USA
McDill et al. (1967, 1969)	Mathematics achievement; college plans	20,345 students in 20 high schools throughout USA
Gardner (1974, 1976)	Attitudes	1,014 Grade 11 physics students in 58 classes in Melbourne, Australia
Payne et al. (1974-75); Ellett & Walberg (1979)	Achievement	3,350 elementary, 3,613 secondary students & 1,200 teachers in Georgia, USA
Marjoribanks (1979, 1980)	Intelligence; personality	250 12 year-old students in South Australia
Studies in Developing Countries		
Walberg, Singh & Rasher (1977)	Achievement	3,000 Grade 10 science & social science students in 150 classes in Rajasthan, India
Fraser, Pearse & Azmi (1982)	Satisfaction; anxiety	373 Grade 8 & 9 students in 18 social studies classes in Padang, Indonesia
Paige (1978, 1979)	Achievement; individual modernity	1,621 Grade 6 students in 60 schools in East Java, Indonesia
Holsinger (1972, 1973)	Information learning; individual modernity	2,533 Grade 3-5 students in 90 classes in Brazil
Persaud (1976)	Noncognitive outcomes including social growth & aspiration levels	1,277 Grade 3 & 6 students in 18 schools in Jamaica
Chatiyanonda (1978)	Attitudes	989 Grade 12 physics students in 31 classes in or near Bangkok, Thailand

[a] From Fraser (1986: 89-92).

CES, or other school- and classroom-level instruments to determine the impact of quality of student life on learning outcomes.[8] The first two subsections deal with studies that used, respectively, the LEI and CES, while the third subsection deals with studies involving other instruments.

Using the Learning Environment Inventory to Predict Learning Outcomes

The Seven Path Breaking Studies of Harvard Project Physics

The earliest research into the associations between students' learning outcomes and their perceptions of classroom environment utilized the LEI as a part of the research and evaluation activities of Harvard Project Physics--an experimental physics course for high school students. These studies are especially important because not only did they provide a foundation upon which later research was built, they illustrate the use of a wide variety of important methodological techniques. In general, the design of this series of studies involved the prediction of learning outcomes measured at the end of a school year from student perceptions of the classroom environment measured during the year, usually with statistical control for performance on corresponding beginning-of-year learning measures.

A Focus on Physics

Before embarking on a review of studies utilizing the LEI, Fraser (1986: 93) notes that when examining the complex research of Harvard Project Physics, one should be made aware of five important points. First, different studies employed one of three similar but not identical classroom environment instruments (namely, the final 15-scale version of the LEI, a slightly different earlier 14-scale version of the LEI that excludes the

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[8] The reason for the selection of these three groups of instruments is that they are the most closely related to the instrument and sample utilized in this research project--in terms of a focus on *conventional* post-secondary *students' perceptions* in an *industrialized country*.

competitiveness scale, and a preliminary version of the LEI called the Classroom Environment Questionnaire). Secondly, different studies involved use of different overlapping samples made up of classes drawn from a random national American sample, a nonrandom national American sample, and a sample from selected regions in Canada. Thirdly, different studies used different batteries of learning outcome measures selected from a physics achievement test, a test on understanding of the nature of science, a science process test, a measure of voluntary participation in physics activities during the previous year, a science interest measure, and semantic differential scales measuring various affective objectives. In addition, different combinations of units of statistical analysis have been used in different studies (namely, individual environment perceptions versus individual learning scores, class mean environment perceptions versus individual learning scores, and class mean environment perceptions versus class mean learning scores). Finally, when estimating the environment-learning relationship, different studies provided control for different student background characteristics (i.e., general ability, a corresponding learning pretest, or a set of learning pretests).

Walberg and Anderson were the first researchers to examine the relationship between quality of classroom climate and learning outcomes. Their first study (1968) investigated the relationship between individual students' perceptions on the Classroom Climate Questionnaire (a preliminary version of the LEI) and individual scores on nine learning criteria, including: achievement, understanding of the nature of science, six affective outcomes, and voluntary participation in physics activities. The sample size available for different analyses ranged from 76 to 96 individual students. When simple correlations were calculated between each learning environment dimension and scores on each learning outcome posttest regression adjusted for corresponding pretests, it was found that the number of significant correlations was more than four times that expected by chance.

An examination of the relationship between class means on environment dimensions and class means on learning outcomes has been reported by Anderson and Walberg (1968). Multiple regression and canonical analysis were used to relate scores on the Classroom Climate Questionnaire in 49 classes to simple gain scores on the three learning criteria of achievement, understanding of the nature of science, and attitude. Multiple correlations obtained between the set of environment variables and gain scores on each learning outcome were 0.68, 0.57, and 0.59 respectively (i.e., 46, 33, and 34 percent of variance explained). However, only the multiple correlation for the achievement scale was statistically significant. The canonical analysis revealed one significant canonical correlation at the conventional .05 level of significance, and this suggested that gains on all three criteria were associated with greater friction, personal intimacy (cohesiveness), and strict control, and less disorganization, stratification, subservience, and formality.

In 1970, Anderson undertook a study to test the relations between individual student learning and the class mean of environmental perceptions. The LEI was utilized to measure environmental perceptions and the four learning outcome measures were achievement, understanding of the nature of science, science processes, and voluntary participation in physics activities. The sample consisted of 800 students randomly selected from a larger nonrandom group of some 2,500 students in 113 classes distributed throughout Canada and 27 states in the United States. In that analyses were conducted separately for males and females, the sample size available for different analyses ranged from 60 to 224. Data were analyzed using a separate 5-term hierarchical regression analysis for each outcome, with each environment scale in turn as predictor and using the following order of entry: general ability, an environment dimension (1-15), a general ability by environment interaction (1-15), a curvilinear general ability term, and a curvilinear environment term. Because of the large number of analyses performed, Anderson provided only a summary of the findings and sketched some informative

regression surfaces depicting results for some of the 5-predictor regression equations. Overall findings from this study confirmed the effects sometimes were curvilinear and differed for students differing in gender and general ability.

Walberg analyzed a data set based on a national sample of 3,700 students in 144 classes in the United States in several ways to provide further valuable information about the predictive validity of student perceptions of their classroom learning environment. In the first of these studies, Walberg (1969a) performed multiple regression analyses in which 14 LEI class means, as a set, were used to predict class mean residual gain scores (i.e., posttest scores adjusted for corresponding pretest scores) on each of six learning criteria. The six learning outcomes were understanding of the nature of science, science processes, physics achievement, voluntary participation in physics activities, science interest, and a semantic differential measure of affective objectives. It was found that the set of 14 LEI scales accounted for between 13 and 30 percent of the variance in residual scores on the different outcome measures (i.e., the multiple correlation ranged from 0.36 to 0.55), and this was statistically significant for five of the six outcomes.

In his second study, Walberg (1969b) calculated simple, multiple, and canonical correlations between class means of raw scores obtained on the same six learning outcome posttest measures. The number of significant correlations between an outcome and an LEI dimension was six times that expected by chance. The multiple correlation between an outcome and the set of LEI scales ranged from 0.43 and 0.63, and was statistically significant for each of the six outcomes. Canonical analysis revealed two significant canonical variates: the first loaded positively on the difficulty scale and predicted cognitive posttests, while the second loaded positively on satisfaction and negatively on friction, apathy, cliqueness, and predicted affective and behavioral posttests. In further analyses, it was found that the two canonical variates of environment variables accounted for significant and substantial variance in raw posttest scores and residual posttest scores after several variables (e.g., general ability) were controlled.

A third article reporting analysis of the same data set employed the student as the unit of analysis and a variety of different data analysis techniques (Walberg, 1972). As random fractions of the class had answered each instrument, the number of students available for any analysis was no less than 715. The four outcome measures analyzed were understanding, achievement, attitude, and voluntary participation. The first analyses involved calculation of simple and multiple correlations whose magnitudes could be compared with those obtained previously (Walberg, 1969b) using the class as the unit of analysis. Walberg found that significant correlations between LEI dimensions and raw scores on the outcome posttests differed in magnitude but not in sign for the two sampling units. The multiple correlations between the set of LEI dimensions and raw scores on learning outcome posttests were 0.29, 0.30, 0.22, and 0.25 (three significant) when the individual was used as the sampling unit compared with 0.63, 0.59, 0.49, 0.43 (all significant) when the class was the unit of analysis. In another analysis reported in this article, two significant canonical correlations of 0.35 and 0.25 were found between the set of 14 LEI scales and raw scores on the set of four learning outcome posttests. In further multiple regression analyses with each learning outcome posttest as criterion, the two canonical variates were entered into the equation after all four learning pretests and general ability. This provided support for the incremental predictive validity of students' perceptions because one or both variates of LEI scores accounted for a significant amount of learning outcome variance even after four pretests and general ability had been controlled.

Moving Beyond Physics

Even though the studies related to Harvard Project Physics provided substantial evidence supporting the predictive validity of students' environment perceptions in physics classes, Walberg and Anderson (1972) explored this question for a variety of other subject areas. Their sample in this study consisted of approximately 1,600

secondary students in 64 classes in Montreal. External examination results in eight subject areas (three science[9] and five non-science[10]) were used as criterion variables. Multiple regression analyses employing the class as the unit of analysis revealed that the set of LEI dimensions accounted for a significant increment of 51 percent of cognitive examination achievement variance beyond that attributable to general ability. Also the environment-achievement relationship was found to be consistent across classes of different mean general ability and nearly constant across subject areas.

Moving Beyond the Harvard Project

In 1976, Lawrenz conducted another large-scale study of the predictive validity of students' environment perceptions in science classrooms. A random sample of 238 senior high school classes from 12 states in three Midwest regions in the United States provided responses to 10 scales selected from the LEI, as well as a science attitude inventory. When multiple regression analyses were conducted separately for biology, chemistry, and physics classes using the class as the unit of analysis, it was found that the amount of variance in raw attitude scores accounted for by the block of 10 learning environment variables was 39 percent for biology, 32 percent for chemistry, and 29 percent for physics. These amounts were statistically significant at the .05 level in each case.

Fraser (1979) explored the predictability of seven science outcomes (three inquiry skills, understanding of the nature of science, and three attitudes) from student perceptions on a modified 9 scale version of the LEI, which incorporated changes to make it more readable for seventh graders, and more suitable for individualized science classrooms. The sample consisted of 531 seventh grade students in 20 classrooms in Melbourne, Australia. The sampling unit was the mean for the subgroup in the class,

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[9] The three science related subject areas included: physics, chemistry, and biology.
[10] The five non-science related subject areas included: geography, mathematics, English literature, history, and French.

formed by grouping students similar in socioeconomic status, general ability, and gender. In fact each class provided eight of these subgroups (e.g., high socioeconomic status/high general ability/female, . . . low socioeconomic status/low general ability/male). Multiple regression analyses revealed that the increment in end-of-year achievement variance accounted for by the set of environment scales (beyond that attributable to corresponding beginning-of-year scores, socioeconomic status, general ability and gender) ranged from 2.9 to 22.4 percent (with a mean of 8.2 percent) for different learning criteria. Furthermore, these increments were statistically significant for five of the seven outcomes. In analyses of other data collected from the same sample (Fraser, 1978), it was found that more favorable classroom environments (especially in terms of more satisfaction) tended to promote more positive attitudes to experiments as a source of scientific information, while less favourable environments (especially in terms of more difficulty, competitiveness, disorganization, and a worse material environment) tended to promote more positive attitudes to three nonexperimental and more authoritarian sources, namely, experts, books, and teachers.

Hofstein, Gluzman, Ben-Zvi, and Samuel (1979) used a modified version of 13 of the LEI scales in investigating attitude towards chemistry among 400 eleventh grade students from 12 classes in eight Israeli schools. Attitude towards chemistry was measured by four factor-analytic scales (attractive and exciting, clear and understandable, necessary and useful, and inexact and confusing). A canonical analysis using the student as the unit of analysis resulted in two significant canonical correlations of 0.48 and 0.41, respectively, between LEI dimensions and raw attitude scores. When canonical loadings were plotted and orthogonally rotated through 45 degrees, it was found that attitudes to chemistry were more favorable in classes perceived as having higher goal direction and satisfaction and lower disorganization, difficulty, friction, and speed.

O'Reilly (1975) used the LEI in mathematics classes in investigating the relationship between achievement and classroom environment among a sample of 48

Grade 9 and 10 classes in 12 schools in eastern Ontario. Simple, partial, and multiple correlational analyses were performed using the class mean as the unit of statistical analysis. It was found that 10 significant correlations emerged between mathematics achievement and an LEI scale, but this number dropped to three when general ability was controlled. Also the battery of LEI scales accounted significantly for 67 percent of the variance in raw achievement scores.

Combining the LEI with Other Instruments

In an Australian study, Power and Tisher used a modified version of the LEI, together with the Class Activities Questionnaire (Steele, House, & Kerins, 1971) in predicting eight learning outcome criteria (two achievement, three attitude, and three satisfaction) (Power & Tisher, 1975, 1979). Their sample consisted of 315 junior high school students in 20 science classrooms. Data analysis techniques used in relating classroom environment characteristics to outcomes included a canonical analysis with the student as the sampling unit, and a simple and partial (with corresponding pretests controlled) correlational analysis using both students and classes as the units of analysis. Moreover, multiple correlation analyses were performed using models that included an environment-IQ interaction term and a quadratic environment term. Overall the results suggested the existence of a number of statistically significant but comparatively weak relationships between outcomes and environment dimensions. Examples of the results obtained from the partial correlational analysis are that achievement was significantly greater in classes characterized by greater cramming and interpretation, and less apathy.

Combining the CAQ and LEI to examine classroom environment was not particular to Australia. On the other side of the globe, Cort (1979) incorporated these learning environment scales in a study of 81 social studies classes at the Grade 5 and 6 levels in 76 schools throughout 11 American states. Classroom environment was measured at mid-year by a composite variable based on principal components analysis of

the Class Activities Questionnaire (Steele, House, & Kerins, 1971) and another composite based on principal components analysis of three scales adapted from the LEI (namely, satisfaction, apathy, and difficulty). Learning outcomes consisted of 10 selected social studies achievement and attitude criteria measured at the beginning and end of the year, and another 10 follow-up measures administered either 6 or 12 months later. Multiple regression analyses with the class as the unit of analysis revealed that the composite variable based on the Class Activities Questionnaire accounted for a significant increment in posttest variance (beyond that attributable to corresponding pretest, class size, and percentage of females in the class) for 8 of the 10 immediate outcome measures and for three of the follow-up measures. The composite variable based on the three LEI scales accounted for a further significant increment in variance for 2 of the 10 immediate outcome measures but for none of the follow-up measures. Also, an informative canonical analysis reported by Cort confirmed the presence of a relationship between classroom environment and measures of cognitive and affective outcomes.

Haladyna and Shaughnessy have reported a study of the effects of classroom environment on student attitudes, which involved the use of an instrument based on the LEI and CES. Their sample consisted of 5,804 science, mathematics, and social studies students in 277 Grade 4, 7, and 9 classes in Oregon, USA (Haladyna, Olsen, & Shaughnessy, 1982; Haladyna, Shaughnessy, & Redsun, 1982a, 1982b; Haladyna, Shaughnessy, & Shaughnessy, 1983). Simple correlational and multiple regression analyses performed separately for each subject area and grade level (with sample sizes ranging from 22 to 38 classes) revealed numerous statistically and practically significant relationships between student attitudes and classroom environment dimensions. For example, environmental factors such as cohesiveness and organization were consistently linked with more positive attitudes at different grade levels and for different subjects. Generally relationships were stronger at higher grade levels.

Using the Classroom Environment Inventory to Predict Learning Outcomes

In addition to the comprehensive studies involving the LEI described in detail in the first subsection, several other investigations of outcome-environment relationships have involved use of the CES.

The Four Path Breaking Studies by the Creators of the CES

Trickett and Moos (1974) first used the CES to explore the relationship between student satisfaction and moods, and their perceptions of their classroom environment. The dependent variables consisted of four satisfaction variables (satisfaction with school, other students, the teacher, and the material learned) and three mood variables (feelings of anger, security, and interest about the class). The sample consisted of 608 students in two matched groups of 18 classes from 18 different high schools in the United States. When simple correlations between CES and raw criterion scores were calculated separately for the two matched groups using the class as the unit of analysis, it was found that the number of significant correlations was approximately six times that expected by chance. In particular, the data demonstrated a relationship between noncognitive variables like satisfaction and mood and CES scales classifiable as relationship dimensions in Moos's scheme. In a related study, Moos (1978) compared the levels of student satisfaction, student mood, and teacher satisfaction in five distinctive types of classes. These five types--control oriented, innovation oriented, affiliation oriented, task oriented, and competition oriented--were identified by cluster analysis of CES scores from a sample of over 200 classes. Results generally indicated significant differences between clusters on the various student satisfaction, student mood, and teacher satisfaction scales.

Moos and Moos (1978) then went on to use the nine CES scales to explore relationships between environment perceptions and student absences and grades among a sample of 19 high school classes in one school. A distinctive feature of this study was that both students' and their teachers' perceptions were measured in order to compare the

predictive validity of teacher perceptions with that of student class mean perceptions. Simple correlational analysis revealed that the number of significant relationships between the outcomes and either student or teacher perceptions on a CES scale was about six times that expected by chance. Mean grades were significantly correlated with student perceptions of greater involvement, affiliation, and teacher support, and less rule clarity and teacher control. Furthermore, the correlations between grades and teacher perceptions had the same sign for each of these five CES dimensions and were significant for the involvement and teacher control scales. Also it was found that the median number of absences was significantly correlated with student perceptions of greater competition and teacher control, and with teacher perceptions of less teacher support.

In the last study undertaken by the creators of the CES, Moos (1979) used a sample of 241 secondary school classes in the United States to explore the predictability of five indexes of student reactions to five domains of predictor variables. The five student reaction indexes were friendship formation, sense of well-being, satisfaction with learning, satisfaction with teacher, and alienation. One predictor domain consisted of student perceptions of six classroom environment types formed by cluster analysis of CES scores (namely, innovation oriented, structured relationship oriented, supportive task oriented, supportive competition oriented, unstructured competition oriented, and control oriented). The four other domains of predictors were made up of overall context characteristics (i.e., school types), organizational characteristics (i.e., class size), aggregate student characteristics (i.e., male/female ratio), and teacher characteristics (i.e., teaching experience). It was found that the total variance accounted for in the different student reaction outcomes by the five predictor domains combined ranged from 46 to 59 percent. Although the set of aggregate student characteristics uniquely accounted for more outcome variance than any of the other domains, student-perceived environment still uniquely explained between 1 and 28 percent of the variance in different outcomes. Specific findings included that the classroom environment block uniquely explained

about half of the predictable variance in student satisfaction with the teacher, and that students in supportive task oriented and supportive competition oriented classes showed the most positive reactions on the outcome criteria.

Moving Beyond the Pioneers

Following the lead of Trickett and Moos, Fisher and Fraser (1983) decided to employ the CES to study the relationship between students' learning outcomes and their perceptions of classroom environment in a sample of 116 Grade 8 and 9 science classes throughout Tasmania, Australia. Relationships between a set of nine learning outcomes (six affective and three cognitive) and the set of nine classroom environment scales in the CES were explored using the class mean as the unit of analysis and six different data analysis techniques. Three of these were a simple correlational analysis between raw scores on outcome posttests and environment scales, a multiple correlational analysis involving the prediction of raw scores on each outcome posttest from the set of nine environment scales, and a canonical analysis involving raw scores on the set of nine outcome posttests and the set of nine environment scales. The other three analyses were analogous except that, instead of employing raw posttest scores as criteria, use was made of residual posttest scores adjusted for corresponding pretests and general ability. Overall, these results replicated prior research by furnishing evidence of sizable relationships between students' outcomes and perceptions of classroom environment.

In the same year, Martin-Reynolds and Reynolds (1983) used the CES in predicting classroom robustness (i.e., the level of excitement and importance) among a sample of 663 randomly selected students in Northwestern Ohio. The multiple correlation between robustness and the set of nine CES dimensions was 0.69. Greater robustness was found in classes perceived to have more involvement, teacher support, affiliation, innovation, and rule clarity.

Using Modified Versions of the CES to Predict Social Psychological Outcomes

In recent years researchers have begun to use modified versions of the CES in attempts to establish associations between student perceptions of classroom environment and various social psychological outcomes.

When Galluzi, Kirby, and Zucker (1980) used some scales selected and adapted from the CES and LEI with a sample of 414 fifth grade students and their 25 teachers in the United States, it was generally found that students' concepts of themselves and others were more positive in classes with greater involvement, affiliation, teacher support, and satisfaction. In a study of self-control among 750 Grade 4 and 5 children in 36 classes in the United States, Humphrey (1986) assessed students' and teachers' perceptions on five dimensions that emerged from a factor analysis of a modified version of the CES. Analyses involving the class mean as the unit of analysis revealed that relationships between student self-control and classroom environment were relatively weak for teachers' perceptions but much stronger for students' perceptions. In particular, student self-control was greater in classes perceived by students as having more involvement, organization, and rule clarity. Keyser and Barling (1981) used three dimensions developed by factor analysis from a modified version of the CES in a study of children's academic self-efficacy beliefs among a sample of 504 sixth grade students and their 16 teachers in South Africa. It was found that self-efficacy beliefs were stronger in classes in which students perceived to have greater rule specification and student participation.

The four outcomes of mood, achievement, popularity, and adjustment were used in some research that reported results separately for student-perceived classroom environment and teacher-perceived classroom environment (Wright & Cowen, 1982). The sample consisted of 511 Grade 5 and 6 students and their 23 teachers in the United States. Classroom environment was assessed by an instrument based on a factor analysis of a short form of the CES. For the analysis involving class means of student perceptions, outcome-environment associations were stronger for "problem" students and

the main general finding was that student popularity was greater in classes that students perceived to have higher order, organization, and affiliation. For the analyses involving teacher perceptions, relationships were again stronger for problem students, and the main general finding was that teacher perceived involvement, affiliation, rule clarity, order, and organization were related to more positive student mood, greater student popularity, and better adjustment.

Using Other Instruments to Predict Learning Outcomes

Classroom-Level Instruments

Kelly (1980) reported a study of associations between student-perceived classroom environment and student achievement based on data from the first survey of science students conducted by the International Association for the Evaluation of Educational Achievement (IEA). Of the 19 countries surveyed for several age groups, Kelly chose the 14-year-old sample consisting of 41,657 students in 1,735 schools in the 14 developed countries (namely, Australia, Flemish Belgium, French Belgium, England, Finland, Germany, Hungary, Italy, Japan, New Zealand, Scotland, Sweden, The Netherlands, and The United States) for analysis. Student perceptions of classroom environment were measured by two factor-analytic scales named *exploration* (emphasis on questioning, problem-solving, and practical work) and *authority* (emphasis on appeal to the authority or the written word). When the country was used as the unit of analysis in between-country analyses, achievement was significantly and positively related to the level of classroom exploration, whereas its relationship with classroom authority was positive but less pronounced and nonsignificant. Also, when the school was used as the unit of analysis in within-country analyses conducted for seven of the countries, significant positive correlations emerged between achievement and exploration in most countries, whereas the correlations between achievement and authority showed some variation in sign between countries.

Eash and Waxman (1983) made use of the final eight scales contained in the OCIW (Our Class and Its Work) questionnaire to predict scores on the Metropolitan Reading Survey Test. The sample consisted of 762 students in 36 Grade 4 and 5 classes in Chicago. When the individual unit of analysis was used in a multiple regression analysis involving pretest reading scores and the eight OCIW dimensions, inspection of regression weights indicated that posttest reading scores were significantly higher in classes characterized by less didactic instruction, more instructional time, and more appropriate pacing. Nevertheless, none of these significant relationships persisted when the class median was used as the unit of analysis.

Talton (1983) studied the effects of classroom environment on the attitude and achievement of a sample of 1,456 tenth grade biology students taught by 23 different teachers in 70 classes in four schools in North Carolina. Classroom environment was measured by a locally developed instrument consisting of six indicators (class climate, curriculum, physical environment, teacher, other students, and friends' attitudes). When data were analyzed using LISREL, classroom environment was strongly related to attitude but relatively weakly associated with achievement. However, further analyses suggested the interesting but tentative finding that attitude plays an important role in mediating the influence of classroom environment on achievement. In another study involving 12 schools, classroom environment variables again bore consistently strong relationships with attitudes to science at the Grade 6, 7, 8, 9, and 10 levels (Talton & Simpson, 1984).

School-Level Instruments

In addition to the above three studies of classroom-level environment, there are a number of other studies that have explored relationships between learning and school-level environment.

A good example of such research is Perkins' (1978) study involving a large sample of 3,703 fourth grade students and their 958 teachers in 42 elementary schools in

five school systems in the southeastern United States. Teacher perceptions of school climate were measured by 14 scales contained in The School Survey (Coughlan, 1970), while student outcomes consisted of five areas of the Iowa Test of Basic Skills (vocabulary, reading, language, work study skills, and mathematics) and average daily school attendance. Data were analyzed by simple and multiple correlational techniques with the school mean as the unit of analysis. Significant simple correlations (at the .05 level) emerged between each Iowa test and each school environment scale in every case except one (supervisory relations and work study skills), and between average daily attendance and two environment scales (educational effectiveness and evaluation of students). The multiple regression analyses revealed that the amount of variance accounted for by the set of 14 school environment scales was 55 percent for the average daily attendance criterion and ranged from 64 to 76 percent for the Iowa tests. In particular, it was found that teachers' perceptions of the schools' educational effectiveness was the most important environmental dimension in accounting for variance in achievement on each of the five Iowa tests.

Brookover has reported another study in which perceptions of school-level environment are related to the academic performance of students (Brookover, et al., 1978; Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Brookover & Schneider, 1975). The sample consisted of 8,078 fourth and fifth grade students, 327 teachers and 68 principals in a random sample of schools in Michigan. Brookover's instrument measures student perceptions of five dimensions (sense of academic futility, future evaluations and expectations, present evaluations and expectations, teacher push and teacher norms, and academic norms), teacher perceptions of five dimensions (ability evaluations, expectations and quality of school completion, teacher-student commitment to improve, principal's expectations, and academic futility) and principal perception of four dimensions (parent concern and expectations for quality education, efforts to improve, principal and parent evaluation of present school quality, and present

evaluations and expectations of students). Simple correlational analysis with the school mean as the unit of analysis revealed that the magnitude of the simple correlation between achievement and an environment scale ranged from 0.01 to 0.77. In particular, student sense of academic futility was found to have the largest (although negative) correlation with achievement. Multiple regression analyses with the school as the unit of analysis revealed that the amount of achievement variance accounted for by the set of 14 school environment variables (before and after socioeconomic status and the ratio of white to black students were controlled) was 73 and 4 percent, respectively. By narrowing the focus to students from families of lower socioeconomic statuses who were thought to be permanently handicapped by their home environments, Brookover and his colleagues compared schools in low socioeconomic status areas where student achievement scores were increasing, with schools where student achievement scores were decreasing. They found that classrooms where students were typically high achievers contained teachers who set rigorous academic standards and clearly communicated their expectation that students strive to achieve these expectations. In other words, the teachers of achievement oriented students were not only cognitively demanding, they provided a supportive and empathic emotional climate for their students.

McDill, Meyers, and Rigsby (1967) and McDill, Rigsby, and Meyers (1969) have investigated the predictive validity of school-level environment by using environment scales derived from a factor analysis of some items based on the High School Characteristics Index (Stern, 1970). The large sample that provided their perceptions of school environment consisted of 20,345 students and 1,029 teachers in a national sample of 20 high schools in the United States. Factor analysis revealed that 80 percent of the variance could be explained by the following six factors: academic emulation, student perception of intellectualism-estheticism, cohesive and egalitarian estheticism, scientism, humanistic excellence, and academically oriented student status system. Multiple regression analyses revealed that, with father's education, student academic values and

student ability held constant, each one of the six environment scales was significantly related to mathematics achievement, and five of the climate scales (with the exception of scientism) were significantly related to college plans.

Gardner (1974, 1976) employed a modified version of eight environment scales selected form the High School Characteristics Index in predicting four attitudinal criteria from student perceptions of the school environment. The sample consisted of 1,014 Grade 11 physics students in 58 classrooms in 34 different schools in Melbourne, Australia. Analysis of covariance techniques with the student as the unit of analysis revealed that the number of significant associations between an attitudinal outcome and a classroom environment dimension was five times that expected by chance. An example of the results obtained in this study is that students expressed greater enjoyment of physics learning in classrooms perceived as highly achievement-oriented, cognitively well-organized, intellectual, stimulating, and physically well-organized.

Combining Classroom and School-Level Instruments

Regrettably, prior research seldom has examined the joint influence of the classroom and school environment, as well as the family environment on student outcomes. Marjoribanks (1979, 1980), however, has provided a valuable study in which both school and family variables are related to the three outcomes of intelligence, personality, and school-related affective characteristics among a sample of 250 Australian 12-year-olds. Factor analyses were used to isolate two dimensions of school environment based on two items selected from the CES and the LEI (intellectual orientation and punitive nature), two dimensions of family environment (parents' press for achievement and parent-child involvement), four personality dimensions (contemplativeness, self-reliance, adjustment, and extroversion), and two school-related attitude dimensions (commitment to school and school self-confidence). Marjoribanks conducted, separately for males and females, a series of multiple regression analyses involving linear,

curvilinear, and interaction terms to investigate relationships between outcomes, school environment, and family environment, and several regression surfaces were constructed to illustrate the complex relations among the three domains. One of the informative figures provided showed the regression-fitted relationship between commitment to school (outcome), student perceptions of intellectual orientation (school environment) and different levels of parents' press for achievement (family environment). Taken together, the complex results from this study refuted much previous research, which suggested, compared with measures of family environment, that school environment variables bear negligible relationships with student outcome criteria.

After reviewing over 50 studies of the impact of quality of elementary and secondary student life on a variety of learning outcomes, as measured by the LEI, CES, and other school- and classroom-level instruments, it is abundantly clear that there is consistent support for the predictive validity of student perceptions of their educational environments in accounting for appreciable amounts of variance in learning outcomes. In comparison, the research conducted on the impact of quality of post-secondary student life on learning outcomes is still in its infancy. Before reviewing this research, however, the next section will provide an overview of the existing measures of quality of student life in university and college environments.

Quality of Student Life in Post-Secondary Educational Environments

In stark contrast to the vast quantity of research on quality of elementary and secondary student life, the attention paid to quality of post-secondary student life issues has been entirely inadequate. Discussion of the quality of university student life literature will begin with an examination of the school- and classroom-level instruments that have been developed to measure this concept, and the two exploratory studies that have

attempted to understand the association between university students' perceptions of classroom environment and learning outcomes.

Measures of Quality of Post-Secondary Student Life

Comparable to the techniques designed to measure elementary and secondary student life, measures of university and college student life can also be divided into school- and classroom-level instruments. While early conceptualization and instrumentation predominantly concentrated on the school-level environment of entire college and university institutions, more recent work has narrowed the focus to that of the seminar, lecture hall, or classroom-level environment. The College Characteristics Analysis and the Environmental Assessment Technique are early school-level environment instruments, and more recent instruments include the College and University Environment Inventory, the College Classroom Environment Scales, and the Quality of University Student Life Questionnaire--an instrument that provides the basis for this research project.

Early School-Level Environment Instruments

The College Characteristics Index

Developed in 1958 by Pace and Stern, the College Characteristics Index (CCI) was the first systematic measuring tool for college environments. This instrument measures "college press", which is defined as the environmental demands that students perceive to be exerted by a given school. Like the LEI and CES, this instrument is theoretically grounded in Murray's (1938) seminal work on environmental press. Pace and Stern laid considerable stress on the significance of person-environment congruence as a possible predictor of the individual's satisfaction and success in a particular environment. Their work conceptualized and measured individuals in terms of

psychological needs, and congruence was a matter of need-press similarity or correspondence.

This test consists of 300 statements about college environments to which responses of the "true-false" form are given. The statements are organized into thirty 10 item scales, which correspond to the 30 needs in Murray's taxonomy. See Figure 2.5: Murray's Taxonomy of Needs. The following types of questions guided the writing of items: what might there be in a college environment to reinforce or reward an individual who had a high need for achievement, energy, nurturance, play or understanding, etc.? The items themselves are statements about college life; therefore, they refer a wide variety of elements of student life from the curriculum, college teaching, classroom activities, rules, regulations, and policies, to student organizations, activities, interests, as well as features on campus.[11] To each statement in this index the respondent answers true if he or she believes it is generally characteristic of the college, is something that occurs or might occur, or it is the way people tend to feel or act; and the person answers false if he or she believes the statement is not characteristic of the college, is something that is not likely to occur, or it is not the way people typically feel or act.

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[11] For example, a college environment which has a press toward order might be a place where "faculty members and administration have definite and clearly posted office hours", "professors take attendance in class", or "students have assigned seating". A person with a high need for energy might be expected to find fulfillment and satisfaction in a college environment where "there is an extensive program of intramural sports and informal athletic activities", "student gathering places are typically noisy and active", or "class discussions are typically vigorous and intense" (Pace & Stern, 1958: 270).

Figure 2.5:

Murray's Taxonomy of Needs [a]

1. Aba *Abasement* - Ass *Assurance*: self-depreciation versus self-confidence.
2. Ach *Achievement*: striving for success through personal effort.
3. Ada *Adaptability* - Dfs *Defensiveness*: acceptance of criticism versus resistance to suggestion.
4. Aff *Affiliation*: group-centered social orientation.
5. Agg *Aggression* - Bla *Blame Avoidance*: hostility versus its inhibition.
6. Cha *Change* - Sam *Sameness*: flexibility versus routine.
7. Cnj *Conjunctivity* - Dsj *Disjunctivity*: planfulness versus disorganization.
8. Ctr *Counteraction*: restriving after failure.
9. Dfr *Deference* - Rst *Restiveness*: respect for authority versus rebelliousness.
10. Dom *Dominance* - Tol *Tolerance*: ascendancy versus forbearance.
11. E/A *Ego Achievement*: striving for power through social action.
12. Emo *Emotionality* - Plc *Placidity*: expressiveness versus stolidness.
13. Eny *Energy* - Pas *Passivity*: effort versus inertia.
14. Exh *Exhibitionism* - Inf *Inferiority Avoidance*: attention-seeking versus shyness.
15. F/A *Fantasied Achievement*: daydreams of extraordinary public recognition.
16. Har *Harm Avoidance* - Rsk *Risktaking*: fearfulness versus thrill-seeking.
17. Hum *Humanities, Social Science*: interests in the humanities and the social sciences.
18. Imp *Impulsiveness* - Del *Deliberation*: impetuousness versus reflection.
19. Nar *Narcissism*: vanity.
20. Nur *Nurturance*: helping others.
21. Obj *Objectivity* - Pro *Projectivity*: objective detachment versus superstition or suspicion.
22. Ord *Order* - Dso *Disorder*: compulsive organization of details versus carelessness.
23. Ply *Play* - Wrk *Work*: pleasure seeking versus purposefulness.
24. Pra *Practicalness* - Ipr *Impracticalness*: interest in practical activity versus indifference to tangible personal gain.
25. Ref *Reflectiveness*: introspective contemplation.
26. Sci *Science*: interest in the natural sciences.
27. Sen *Sensuality* - Pur *Puritanism*: interest in sensory and aesthetic experiences versus austerity or self-denial.
28. Sex *Sexuality* - Pru *Prudishness*: heterosexual interests versus asceticism.
29. Sup *Supplication* - Aut *Autonomy*: dependency versus self-reliance.
30. Und *Understanding*: intellectuality.

[a] From Stern (1970: 315-317).

The Environmental Assessment Technique

From a somewhat different theoretical perspective, Astin and Holland (1961) produced the Environmental Assessment Technique (EAT) and validated it with the CCI. The EAT is based on the notion, suggested by Linton (1945), that a major portion of environmental forces is transmitted through other people. We can infer from this that the character of a social environment is dependent upon the nature of its members.

Moreover, the *dominant* features of an environment are dependent upon the *typical* characteristics of its members. If we know the character of the people in the group, we should know the climate that group creates. Therefore, knowing the typical characteristics of university or college students allows us to understand the climate that they as a group create. Post-secondary climate is measured using an eight variable environmental assessment index based on the following student variables: the size of student body; average intelligence level of student body; and six student personality types, realistic, intellectual, social, conventional, enterprising, and artistic (Holland, 1959).[12] In combination, these eight variables encompass an extensive range of the students' attributes, including personality, interests, values, originality, self-concept, goals, and aptitudes.

Recent Classroom-Level Environment Instruments

Now that the review of early school-level environment instruments is complete, discussion will now turn to three recent classroom-level environment instruments.

The College and University Classroom Environment Inventory

The College and University Environment Inventory (CUCEI) was developed by Fraser, Treagust, and Dennis, in 1986, as the first classroom-level instrument to measure the quality of post-secondary student life. See Figure 2.6: College & University

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[12] People with *realistic* orientations are physically strong, unsociable, aggressive, and partial to the concrete as opposed to the abstract, while those with *intellectual* orientations are task-oriented, intraceptive, asocial, and prefer to think through rather than act out. *Social* people are sociable, responsible, need attention, avoid intellectual problem-solving, and are orally dependent; *conventional* people are conformists, and prefer structured numerical and verbal activities, and subordinate roles. People with an *enterprising* orientation possess verbal skills for dominating, selling, leading others, and are orally aggressive; and finally, those persons who are *artistic* are asocial, intraceptive, avoid problems that are highly structured or require gross physical skills, and feel a need for individualistic expression (Holland, 1961).

Classroom Environment Inventory. This instrument is intended for use in small groups (30 students at the most) commonly referred to as seminars or tutorials, thus it is not suitable for use in lectures or laboratory classes (Fraser, 1986: 29-30). The type of small group class for which the CUCEI is intended is one that potentially provides scope for some student involvement, individualization, and the development of relationships between teacher and students, as well as among students.

Figure 2.6:

College & University Classroom Environment Inventory [a]

The purpose of this questionnaire is to find out your opinions about the class you are attending right now. This questionnaire is designed for use in gathering opinions about *small classes* at universities or colleges (sometimes referred to as *seminars* or *tutorials*). It is *not* suitable for the rating of lectures or laboratory classes. This form of the questionnaire assesses your opinion about what this class is *actually like*. Indicate your opinion about each questionnaire statement by circling:

SA	if you STRONGLY AGREE	that it describes what this class is actually like.
A	if you AGREE	that it describes what this class is actually like.
D	if you DISAGREE	that it describes what this class is actually like.
SD	if you STRONGLY DISAGREE	that it describes what this class is actually like.

1. The instructor considers students' feelings.
2. The instructor talks rather than listens.
3. The class is made up of individuals who don't know each other very well.
4. The students look forward to coming to classes.
5. Students know exactly what has to be done in class.
6. New ideas are seldom tried out in this class.
7. All students in the class are expected to do the same work, in the same way and in the same time.
8. The instructor talks individually with students.
9. Students put effort into what they do in classes.
10. Each student knows the other members of the class by their first names.
11. Students are dissatisfied with what is done in the class.
12. Getting a certain amount of work done is important in this class.
13. New and different ways of teaching are seldom used in this class.
14. Students are generally allowed to work at their own pace.
15. The instructor goes out of his/her way to help students.
16. Students 'clockwatch' in this class.
17. Friendships are made among students in this class.
18. After the class, the students have a sense of satisfaction.
19. The group often gets sidetracked instead of sticking to the point.
20. The instructor thinks up innovative activities for students to do.
21. Students have a say in how class time is spent.
22. The instructor helps each student who is having trouble with the work.
23. Students in this class pay attention to what others are saying.
24. Students don't have much chance to get to know each other in this class.

25. Classes are a waste of time.
26. This is a disorganized class.
27. Teaching approaches in this class are characterized by innovation and variety.
28. Students are allowed to choose activities and how they will work.
29. The instructor seldom moves around the classroom to talk with students.
30. Students seldom present their work to the class.
31. It takes a long time to get to know everybody by his/her first name in this class.
32. Classes are boring.
33. Class assignments are clear so everyone knows what to do.
34. The seating in this class is arranged in the same way each week.
35. Teaching approaches allow students to proceed at their own pace.
36. The instructor isn't interested in students' problems.
37. There are opportunities for students to express opinions in this class.
38. Students in this class get to know each other well.
39. Students enjoy going to this class.
40. This class seldom starts on time.
41. The instructor often thinks of unusual class activities.
42. There is little opportunity for a student to pursue his/her particular interest in this class.
43. The instructor is unfriendly and inconsiderate towards students.
44. The instructor dominates class discussions.
45. Students in this class aren't very interested in getting to know other students.
46. Classes are interesting.
47. Activities in this class are clearly and carefully planned.
48. Students seem to do the same type of activities in every class.
49. It is the instructor who decides what will be done in our class.

[a] From Fraser, Treagust & Dennis (1986: 54).

The initial development of the CUCEI involved examining the individual scores and individual items contained in three pioneering classroom environment instruments, namely the LEI, CES, and ICEQ. This provided a basis for the selection of dimensions that, after redefinition, were considered salient in post-secondary seminars and tutorials. A set of items was written and subjected to the scrutiny of a number of college educators. After rewriting and eliminating many items in the light of reactions obtained, a trial version of the CUCEI containing 12 items per scale was field tested with a sample of 127 students in 10 seminars or tutorials. The final form of this instrument contains seven items in each of seven scales; each item is responded to using the four categories of strongly agree, agree, disagree, and strongly disagree (Fraser et al., 1986). The seven scales consist of the following: personalization, involvement, student cohesiveness, satisfaction, task orientation, innovation, and individualization. Like the CES and ICEQ,

each one of the seven scales is based upon Moos's (1979) conceptualization of the three basic dimensions of all social environments: relationships, personal development, and system maintenance and change.

The first four scales (personalization, involvement, student cohesiveness, and satisfaction) represent the relationship dimension. The *personalization* scale describes the emphasis on opportunities for individual students to interact with the instructor and on concern for students' personal welfare; the *involvement* scale taps the extent to which students participate actively and attentively in class discussions and activities. In addition, while the extent to which students know, help, and are friendly towards each other is known as *student cohesiveness*; the *satisfaction* scale is defined as the extent of enjoyment of classes. The only measure of the personal development dimension is the *task orientation* scale, which examines the extent to which class activities are clear and well organized. The final two scales are related to the system maintenance and change dimension. While the *innovation* scale investigates the extent to which the instructor plans new, unusual class activities, teaching techniques, and assignments, the *individualization* scale probes the extent to which students are allowed to make decisions and are treated differently according to ability, interest, or rate of working.

The College Classroom Environment Scales

The College Classroom Environment Scales (CCES) were developed by Winston and his colleagues in 1988 as an atheoretical alternative to the CUCEI. This instrument was created to assess students' perceptions of their collegiate classroom environments for practical purposes such as course and professor evaluations. The final version of the scale, validated by both content and construct validity techniques, is comprised of six scales measured by 62 statements to which students respond using a 5-point scale of: never or almost never true, seldom true, occasionally true, often true, and always or almost always true (Winston et al., 1994: 12). The six scales of the CCES include:

cathartic learning climate, professorial concern, inimical ambiance, academic rigor, affiliation, and structure. A *cathartic learning climate* is characterized by a charged, high energy, and enthusiastic academic atmosphere that stimulates students to be active participants in the class and to seek classmates' opinions and reactions. An academic climate identified by *professorial concern* is one in which students perceive the instructor as being personally concerned about them as individuals, and as striving to foster their educational and personal achievements. *Inimical ambiance* describes the extent to which students perceive the academic environment as hostile, highly competitive, and rigidly structured, expectations and evaluation criteria as unclear, and authority as arbitrary. A classroom characterized by a high degree of *academic rigor* is one that is intellectually challenging and demanding; students perceive a norm of excellence and personal responsibility, which is expressed through high, but realistic, evaluation standards. The *affiliation* scale examines the extent to which students see the class as promoting informal interaction and as being highly supportive, friendly, and student-centered. Finally, *structure* focuses on the extent to which students perceive the class evaluation criteria and course content to be clearly articulated.

The Quality of University Student Life Questionnaire

In stark contrast to the atheoretical derivation of the CCES, Roberts and Clifton (Clifton & Roberts, 1993; Roberts & Clifton, 1988, 1991) utilized a conceptual framework based on prominent sociological theories of socialization and social psychology in the development of their Quality of University Student Life Questionnaires. According to Roberts and Clifton (1991: 13), "without such theoretical linkages, the findings [of quality of student life studies] will be either meaningless or subject to competing interpretations." The most recent version of Roberts and Clifton's Quality of Life in the Faculty of Education Questionnaire (1992), which is contained in Appendix A, provides operationalizations for their theory of effective learning and quality

of university student life, which was discussed in Chapter I. Specifically, the questionnaire's quality of university student life scale consists of 31 items in the affective domain (positive affect, negative affect, interaction with professors, and interaction with students) and 17 items in the cognitive domain (structural--lower cognitive processes, and functional--higher cognitive processes). All of the affective items are prefaced by the phrase, "The Faculty of Education is a place where . . .", and all of the cognitive items are prefaced by the phrase, "In the Faculty of Education, I have been challenged to . . .". Each item is responded to using the four categories of strongly agree, agree, disagree, and strongly disagree. All 48 of these items, which will be described at length in Chapter III, were selected because they demonstrated high content and construct validity, as well as reliability. The rigor of these validity and reliability testing procedures will also be outlined in the following chapter.

Now that the review of both school-level and classroom-level instruments measuring the quality of student life at the post-secondary level is complete, discussion will turn to the studies that have attempted to determine the impact that students' perceptions of quality of life in their classrooms, schools, and faculties have on their learning outcomes.

The Impact of Quality of Post-Secondary Student Life on Learning

While an abundance of research has been conducted to determine the impact of quality of elementary and secondary student life on learning outcomes, only two studies have attempted to explore the linkage between post-secondary students' subjective perceptions of their educational environments and their educational performance.

Two Isolated Exploratory Studies

The Impact of Student Perceptions of Faculty Press on Satisfaction

As the first of the studies in higher education, Genn (1975) attempted to link satisfaction among 137 Diploma of Education students at one Australian university with their perceptions of faculty press (press attributable to the behavior of teachers) as assessed by the College Characteristics Analysis (an adaptation Pace and Stern's College Characteristics Index). In particular, it was found that student satisfaction was higher where the faculty was perceived to be characterized by more humanism, welfare, and scientism, and less practicality. Satisfaction with teaching correlated with actual faculty press for humanism (0.58), for welfare (0.56), for scientism (0.37), and for practicality (-0.21) (Genn, 1975: 78).

The Impact of Student Perceptions of the Classroom on Satisfaction & Locus of Control

A full decade later, Fraser and his colleagues (Fraser & Treagust, 1986; Fraser et al., 1986) conducted the only other study on the impact of quality of post-secondary student life on learning outcomes.

The first phase of their research (Fraser et al., 1986) provided a preliminary report about what aspects of the environment of higher education classes tended to be linked with the outcome of greater student satisfaction. By utilizing the College and University Classroom Environment Inventory on a sample of 127 higher education students, it was found that the multiple correlation between satisfaction and the set of six other scales was as large as 0.78. Moreover, student satisfaction was found to be greatest in small seminar classes and tutorials perceived as having higher levels of involvement, task orientation, and innovation.

Building on this early work, Fraser and Treagust (1986) examined a sample of 372 students from 34 classes (30 Australian and 4 American) for two separate outcome

measures: satisfaction and locus of control (an assessment of personal efficacy among students). Association between these two outcome measures and the six classroom climate dimensions of the CUCEI were investigated using both bivariate and multivariate statistical tests, with the class mean (N=34) as the unit of analysis. The bivariate statistic reported was the simple correlation between each outcome and each environment scale; and, because of correlations among classroom climate variables, multiple regression analysis was used to provide a multivariate test of the joint influence of the set of six environment variables on the outcomes, and the unique contribution to outcome variance made by each individual climate scale.

An analysis of the results of the simple correlational analyses revealed that there were significant bivariate associations between satisfaction and all six environment variables, and between locus of control and the two environment variables: student cohesiveness and task orientation. Classroom satisfaction was higher in classes characterized by greater personalizaton, involvement, student cohesiveness, task orientation, innovation, and individualization, whereas locus of control scores were higher in classes perceived to have more emphasis on student cohesiveness and task orientation. The results of the multiple regression analysis illustrated that the multiple correlation between an outcome measure and the set of six environmental scales was 0.86 for satisfaction (74 percent of the variance accounted for), and 0.59 for locus of control (35 percent of the variance accounted for).

In sum, this research tentatively suggests that the nature of quality of life in university classrooms affects outcomes. Further research is necessary, however, before too much confidence is placed in the specific results of these two studies. It would be desirable to replicate the research with other samples and other outcome measures (cognitive, affective, and behavioral), as well as incorporate provision for statistical control for student background characteristics such as ability, socioeconomic status, and

gender. Furthermore, because the majority of the data is correlational, causality cannot be inferred. Nevertheless, these preliminary findings of associations between student outcomes and the quality of life in higher education classrooms are still important because they replicate considerable prior research at the elementary and secondary school level.

Summary

In this chapter, the literature on quality of student life and its impact on learning outcomes was reviewed. Discussion in the first section introduced the quality of life research. Thoughtful concern about the quality of life began in the United States in the 1960s. As governments established programming to improve quality of life in a wide variety of societal domains, sociologists and other social scientists began developing conceptual definitions and quality of life measurement tools for evaluation purposes. Unfortunately, however, only 1 percent of all articles published on the quality of life by 1986 focused on the educational domain.

In the second section, a review of the quality of student life research in elementary and secondary schools was presented. Five popular pioneering instruments were examined in detail, followed by 13 more recently developed tools. Discussion proceeded to examine the impact of quality of elementary and secondary student life on learning outcomes. A review of over 50 studies has shown that students' perceptions of quality of life do affect their cognitive, affective, and behavioral learning outcomes.

In the final section, the work being done on quality of student life in post-secondary institutions was described. Regrettably, the quality of university student life has received inadequate attention in the sociological literature, in comparison with the quality of student life in elementary and secondary institutions. Nevertheless, five major instruments measuring quality of university student life were reviewed. The two exploratory studies, which investigated the impact of higher education students'

perceptions of quality of life on attitudinal learning outcomes, provide tentative evidence that the quality of university student life affects important learning outcomes.

It is now abundantly clear that this research project--which involves using multiple regression and path analysis to examine the causal effect of university students' subjective perceptions of quality of university student life on their academic attainment, while controlling for important university, demographic, and social psychological variables--makes a significant and unique contribution to the existing literature on quality of student life in institutions of higher education.

Most importantly, by employing Roberts and Clifton's Quality of University Student Life Questionnaire, this study is the first of its kind to utilize theoretically informed and empirically validated measures of quality of university student life to assess the quality of life's influence on important learning outcomes. Theoretically speaking, while the majority of measures focus solely on the affective/social domain of quality of elementary, secondary, and post-secondary student life, Roberts and Clifton's questionnaire is one of only two instruments that focus on the quality of life in both affective and cognitive/intellectual domains of student life. Furthermore, while the majority of instruments possess inferior theoretical or entirely atheoretical orientations,[13]

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[13] While the issues of validity and reliability of the Learning Environment Inventory (LEI), Classroom Environment Scale (CES), Individualized Classroom Environment Questionnaire (ICEQ), Organizational Climate Description Questionnaire (OCDQ), Classroom Atmosphere Scale (CAS), College Characteristics Index (CCI), Environmental Assessment Technique (EAT), and the College and University Environment Inventory (CUCEI) were discussed at great length by their respective creators, the importance of presenting a well-developed theoretical basis for the measures was overlooked. Several prominent instruments, including the LEI, CES, and CCI, seem to be only tangentially based on Henry Murray's notion of 'environmental press'--the notion that people respond to features of the environment based on their individual needs. Similarly, the creators of the EAT only briefly noted that their instrument was based on Linton's notion that dominant features of an environment are dependent upon the typical characteristics of its members. In addition, the creators of the CES, ICEQ, CAS, and CUCEI merely made abrupt, passing comments that their instruments were grounded in Moos's

Roberts and Clifton's questionnaire is based upon prominent sociological theories of education.[14]

In addition, this study is the first to test the hypothesis that student perception of quality of university student life has a causal effect on a learning outcome, while controlling for important university and social background characteristics, as well as individual social psychological variables. It is also the first to examine the impact of quality of university student life on a *cognitive* learning outcome measure--grade point average; finally, it is the first to employ a sample of Canadian students.

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conceptualization of the three categories of psychosocial environments. Finally, the CCES and OCDQ were the most theoretically disappointing because their producers failed to make even the slightest comment regarding their theoretical bases.

[14] Only two of the measures presented in this chapter are grounded in prominent sociological theory: Williams and Batten's Quality of School Life Scales, and Roberts and Clifton's Quality of University Student Life Questionnaire. Williams and Batten were the first sociologists to draw on quality of life, symbolic interactionist, and structural functionalist theories to ground their conceptualization of the affective domain of elementary and secondary student life. In the post-secondary environmental context, Roberts and Clifton employed the ideas contained within socialization, social psychological, and quality of life theories to build upon Williams and Batten's work, and develop a conceptualization of quality of student life in both the affective and cognitive domains.

CHAPTER III

METHODOLOGY

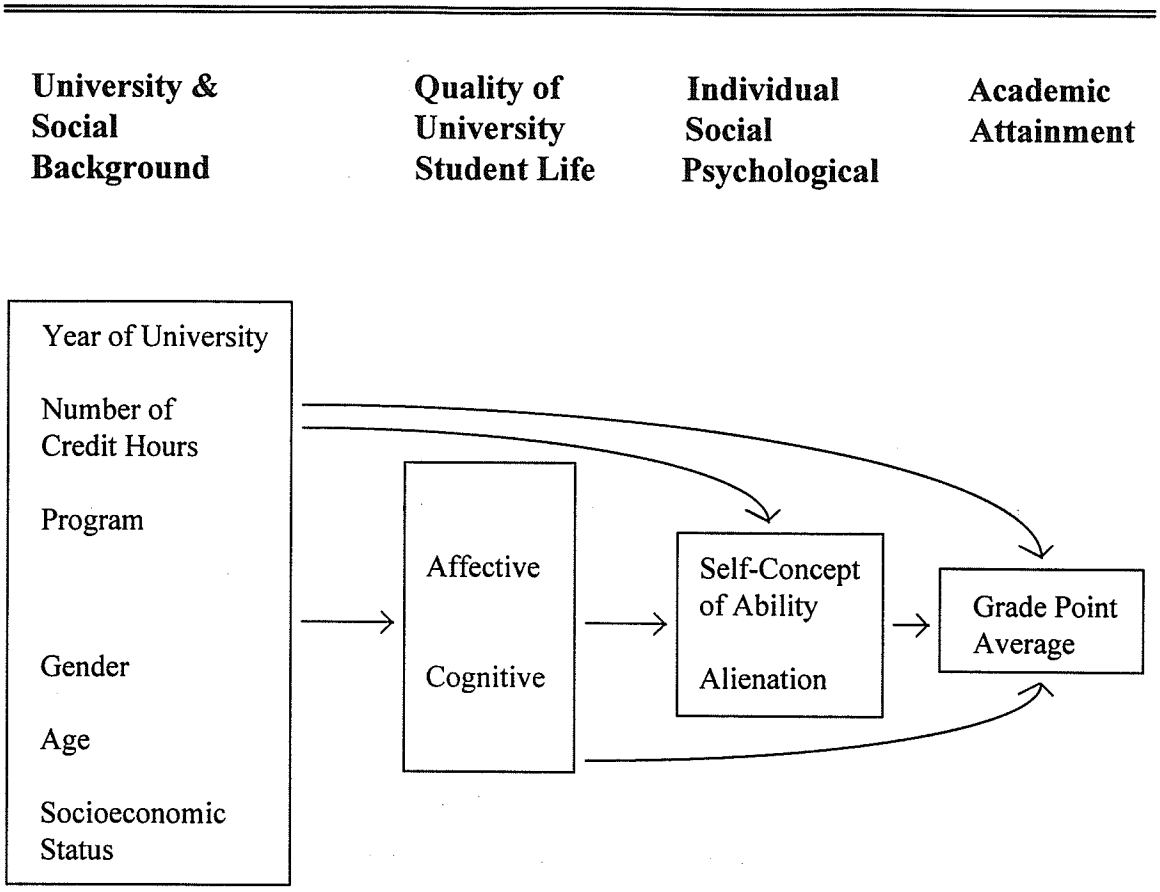
In this chapter, the theoretical model that guides this project is described in detail. This discussion examines five different aspects of the methodology used in the study. First, a brief background of the study is provided, followed by a description of the sample of undergraduate education students. The third section reviews the contents of the 1992 Quality of Life in the Faculty of Education Questionnaire, and then the measurement of all variables in the theoretical model is discussed in detail. In the final section, the structural equation modeling techniques that are employed to test the theoretical model are outlined, and then the univariate and bivariate assumptions are addressed. In sum, this chapter prepares the reader for a detailed presentation of the results of empirical tests of the study's theoretical model, which will be contained in Chapter IV.

The Theoretical Model

Figure 3.1 presents the theoretical model that guides this study. Following the tradition of status attainment models, the model is to be analyzed in a causal direction from left to right. The first block of variables includes three university background variables: year of university, number of credit hours, and program, as well as three social background variables: gender, age, and socioeconomic status. The next block of variables includes two measures of quality of student life: cognitive and affective quality of university student life variables. The third block includes two measures of individual social psychological dispositions: self-concept of ability and alienation. The final block consists of one measure of academic attainment: grade point average.

Figure 3.1:

The Theoretical Model



Background

The data used to test this theoretical model were collected in conjunction with the 1992 Quality of Student Life study in the Faculty of Education at the University of Manitoba.

This study was originally conducted in the spring of 1987 by co-directors Lance Roberts, of the Department of Sociology, and Rodney Clifton, of the Department of

Educational Administration and Foundations, as a part of a review of the Faculty of Education mandated by the University of Manitoba Senate.[15] A significant component of this review involved the administration of a questionnaire to both undergraduate and graduate students enrolled in the faculty. The original questionnaire was designed to assess students' social and university characteristics, the perceptions they have of the quality of their programs, their social psychological dispositions, their grade point averages, and their educational expectations. See Appendix B: Quality of Life in the Faculty of Education Questionnaire (1987).

In response to a request by the Dean of Education--Dr. John Stapleton, a follow-up study on solely undergraduate students was conducted in the spring of 1992 by a research team comprised of Dr. Roberts and Dr. Clifton, as well as Dr. J. Welsh--Curriculum: Mathematics and Natural Sciences, graduate students E. Etcheverry, S. Hasinoff and D. Mandzuk, and research assistants B. DeBrouwere, A. Elliot, B. Fuller, and B. Vuketz.

The results of research on the 1987 data led the research team to redesign the questionnaire to reflect a few minor modifications to the original scales and to add alienation and time management scales. See Appendix A: Quality of Life in the Faculty of Education Questionnaire (1992). The revised questionnaire was approved by an ethics review committee in December of 1991 and was administered to a representative sample of students in February of 1992.

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[15] Other members of the research team included: Dr. Dave Jenkinson, Curriculum: Humanities and Social Sciences; Dr. Janet B. Webster, Educational Psychology; Shelly Marshall, undergraduate education student; and Jamie-Lynn Magnusson, research assistant.

The Sample

A sample of undergraduate education students was selected by employing a stratified random cluster procedure. This procedure involved identifying the mandatory courses in each year of the undergraduate programs and selecting a random sample of classes from these programs. Twenty-four classes representing approximately 20 percent of the population within each academic year of the Bachelor of Education program[16] were selected for the sample; a total of 363 students were enrolled in the 24 selected classes. The instructor of each class was contacted by the Dean of Education so that questionnaires could be distributed to students during classroom instructional time. The questionnaires, which took approximately 25 minutes to complete, were distributed to those students in attendance during the selected class time. Students who were registered in two or more of the selected classes were asked to complete only one questionnaire; some students were absent from class when the questionnaires were distributed, and a few students chose not to complete a questionnaire. Of the 363 questionnaires distributed, 269 were completed, representing a response rate of 74 percent. By analyzing Table 3.1: Sample and Return Rates by Year of Enrollment for Undergraduate Education Students, it is evident that the return rate was relatively similar for the students in the first three years, but significantly lower for students in the fourth year of the program.

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[16] In the 1991-1992 academic year, 1754 students were enrolled as undergraduates in the Faculty of Education.

Table 3.1:

Sample and Return Rates by Year of Enrollment
For Undergraduate Education Students

Year	Sample Size	Surveys Returned	Response Rate
1	72	60	83.3%
2	113	89	78.8%
3	73	59	80.8%
4	105	61	58.1%
Total	**363**	**269**	**74.1%**

The Questionnaire: An Overview

As stated earlier, the 1992 Quality of Life in the Faculty of Education Questionnaire (Appendix A) was designed as a follow-up to the original 1987 questionnaire (Appendix B). In sum, the questionnaire was designed to measure five principal areas: (a) students' perceptions of the cognitive demandingness of their classes; (b) students' perceptions of the affective warmth in their classrooms; (c) the entering characteristics of undergraduate students; (d) the grades that students attained; and (e) their objectives upon graduation.

Part I of the questionnaire included 31 items that asked students about their perceptions of affective quality of university student life. The phrase "The Faculty of Education is a place where . . .", preceded the items in this section, which ranged from "the things I learn are important to me" and "I enjoy being" to "I am treated with respect" and "professors listen to what I say". For each of these items, students were presented with a Likert-type scale that included four response categories: "Strongly Agree", "Agree", "Disagree", and "Strongly Disagree". On a related note, the second part of the questionnaire used 36 questions to ask students about their perceptions of cognitive

quality of university student life. The phrase "In the Faculty of Education, I have been challenged to . . .", preceded the items in this section, which ranged from "remember an extensive number of new terms" and "use theories to address practical questions" to "judge the logic of written arguments" and "identify bias in written material". For each item, students were once again presented with a Likert-type scale that included four response options ranging from "Strongly Agree" to "Strongly Disagree".

Part III of the questionnaire included four sections that examined social psychological dispositions including professional identity, alienation, self-concept of ability, and effort. Section 1 began this line of questioning by focusing on student teachers' "professional identities". Students were asked to focus specifically on their future identities as teachers by completing a 23 item true-or-false commitment index that asked them about their personal thoughts and feelings about being a teacher. Items on this scale ranged from "When people are discussing the topic of teaching, I probably will listen and/or join the conversation" to "If people could know only one thing about me, I would want them to know I will be teacher". In the next section, students were asked about their feelings of alienation in the faculty. For 21 items ranging from "It is almost impossible for one student to really understand the feelings of another" to "Students expect to learn a lot in this faculty", students were presented with a Likert-type scale that included four response options ranging from "Strongly Agree" to "Strongly Disagree". The third section asked students 10 questions about their self-concepts of ability. The first nine items asked students to rate their ability and educational expectations by selecting from five response choices; and the final question asked students to rank, on a scale from 1 to 10, how influential each one of three groups (parents, peers, and most significant other) had been to them. Section 4 of Part III asked students for some information about themselves that relates to the demands on their time. Students were also asked to use a 5-point scale ranging from "Always" to "Never" to complete 13 items that related to time attitudes and time planning.

Part IV asked students for some factual information about their social backgrounds, including their gender, age, and ethnic origin, as well as their mothers' and fathers' educational and occupational levels. On a related note, Part V asked students to provide information about their university backgrounds. Besides asking questions about their grade point averages and plans after graduation, the items in this section asked students about whether or not they had a previous degree, whether or not they were visiting from the University of Winnipeg, how many years of university they had completed, how many credit hours they were taking, and the undergraduate program in which they were enrolled.

Finally, Part VI of the questionnaire asked students to provide their names and permanent addresses if they wished to receive a short report on the results of the study, and Part VII consisted of an open-ended section in which students were asked to record any opinions about life in the Faculty of Education that had not already been covered in previous sections of the questionnaire.

Measurement of Variables in the Theoretical Model

With a review of the background of this study now complete, discussion will turn to the measurement or operationalization of concepts in the theoretical model. Refer to Figure 3.1. It is important to note that abbreviations and descriptive statistics are provided for each one of the model's variables, whether it is measured by a single item or multi-item scales.

University Background Variables

Three university background variables were included in the theoretical model: (a) year of university, (b) number of credit hours, and (c) program.

Year of University (YROFU)

Question 3 of Part V asked students about their previous university experience or *year of university*. Specifically, it asked, "How many years of university education have you completed? If you have been a part-time student, then estimate the number of equivalent full-time years." Students reported previous university education on the ratio level of measurement. Approximately 15 percent of the respondents reported having four years of university education; 67 percent reported having less than four years of education; and 16 percent reported having more than four years of education. Eight (3 percent) of the returned questionnaires had missing data on this question. Table 3.2 presents the descriptive statistics for this variable. As the table illustrates, the mean number of years of university for students in the sample is 2.6; in addition, the distribution for this variable is slightly skewed to the right (0.599), with no kurtosis (0.019).

Table 3.2:

Descriptive Statistics for Year of University

Mean	2.602	Std. Deviation	1.898
Minimum	0.000	Maximum	10.000
Kurtosis	0.019	Skewness	0.599
S E Kurt	0.300	S E Skew	0.151
Std. Error	0.117	Missing Cases	8 (3%)

Number of Credit Hours (CRDHRS)

Data on the *number of credit hours* in which undergraduate students were enrolled was obtained from Question 1 in Section 4 of Part III. Specifically, the question asked, "How many credit hours of course work are you enrolled in this term?", and each response was coded on the ratio level of measurement. All except 6 students (2 percent) answered the question. Students' responses were quite varied, ranging from 3 to 36. A

significant percentage of students, approximately 20 percent, were enrolled in the standard 30 credit hours, while 72 percent enrolled in under 30 credit hours, and about 6 percent of the respondents enrolled in over 30 credit hours of course work. Table 3.3 presents the descriptive statistics for number of credit hours. As the table illustrates, the mean number of credit hours in which students were enrolled is 21; in addition, the distribution for this variable was not skewed (0.075), but platykurtic (-1.045).

Table 3.3:

Descriptive Statistics for Number of Credit Hours

Mean	20.916	Std. Deviation	7.625
Minimum	3.000	Maximum	36.000
Kurtosis	-1.045	Skewness	0.075
S E Kurt	0.299	S E Skew	0.150
Std. Error	0.470	Missing Cases	6 (2%)

Program (PROGRAM, SECOND)

Finally, Question 5 of Part V asked students for the *program* in which they were registered. Specifically, the question read: "From which undergraduate Faculty of Education program do you intend to graduate?" The nominal response categories for this variable included: (a) none, coded as "1"; (b) a secondary program, coded as "2"; (c) an elementary program, coded as "3"; and (d) I have not made a decision yet, coded as "4". To make this variable dichotomous, the author modified the coding scheme. First, those students who were not enrolled in a program or undecided were recoded to system-missing, and then students in the secondary program were recoded as "1", and those in the elementary program were recoded as "2". Data were missing from 21 respondents (8 percent) for this variable. Forty-eight percent of the respondents responded that they were enrolled in the secondary program and approximately 44 percent of the respondents

responded that they were enrolled in the elementary program. This split is very reasonable at roughly a 1:1 ratio.

Table 3.4 presents the descriptive statistics for program. As the table illustrates, the distribution for this variable is very slightly skewed to the right (0.081) and platykurtic (-2.010). This reflects the almost identical percentage of elementary and secondary stream students in the sample.

To satisfy the interval level variable assumption of both multiple regression and path analyses, PROGRAM was recoded into a dichotomous dummy variable: SECOND (Secondary Program). The students who reported being in the elementary program were assigned to the baseline group for comparison purposes.

Table 3.4:

Descriptive Statistics for Program

Mean	1.480	Std. Deviation	0.501
Minimum	1.000	Maximum	2.000
Kurtosis	-2.010	Skewness	0.081
S E Kurt	0.308	S E Skew	0.155
Std. Error	0.032	Missing Cases	21 (8%)

Social Background Variables

Three social background variables were included in the theoretical model: (a) gender, (b) age, and (c) socioeconomic status.

Gender (GENDER, FEMALE)

Data on *gender* was provided by students' self-reports to Question 1 of Part IV, which asked, "What gender are you?" Females were coded as "1" and males were coded as "2"; therefore, gender was measured on a nominal level. Completed questionnaires were received from 198 females (75 percent of the sample) and 67 males (25 percent of

the sample), and 4 respondents failed to indicate their gender. Even though this variable is not very well split with roughly a 3:1 ratio, it is not particularly disturbing.[17] Table 3.5 presents the descriptive statistics for gender. As the table illustrates, the distribution for this variable is skewed to the right (1.144) and slightly platykurtic (-0.697). This reflects the higher percentage of females in the sample.

To satisfy the interval level variable assumption of both multiple regression and path analyses, GENDER was recoded into a dichotomous dummy variable: FEMALE (Female respondents). The students who reported being male were assigned to the baseline group for comparison purposes.

Table 3.5:

Descriptive Statistics for Gender

Mean	1.253	Std. Deviation	0.435
Minimum	1.000	Maximum	2.000
Kurtosis	-0.697	Skewness	1.144
S E Kurt	0.298	S E Skew	0.150
Std. Error	0.027	Missing Cases	4 (2%)

Age (AGE)

To operationalize *age*, Question 2 of Part IV asked students to respond to the question, "How old are you?" Each age was coded in years on the ratio level of measurement. All except 4 students (2 percent) answered the question. Most students' ages fell within a range of 17 to 35 years; however, a small number of students fell within a range of between 35 and 43. Instead of deleting these univariate outliers, students 35

[17] According to Rummel (1970) only dichotomous variables with a .90 to .10 split between categories should be deleted. Shiva Halli (personal communication, January 8, 1996) has noted, however, to be cautious of dichotomous variables with is a .75 to .25 split.

years of age and over were recoded as being 35 in order to normalize the distribution for this variable.[18] Table 3.6 presents the descriptive statistics for AGE. As the table illustrates, the mean age of students was 23 years and 71 percent of the students were between the ages of 17 and 23. In addition, this variable was moderately skewed to the right (1.302) and slightly leptokurtic (0.991).

Table 3.6:

Descriptive Statistics for Age

Mean	22.743	Std. Deviation	4.536
Minimum	17.000	Maximum	35.000
Kurtosis	0.991	Skewness	1.302
S E Kurt	0.298	S E Skew	0.150
Std. Error	0.279	Missing Cases	4 (2%)

Socioeconomic Status (SES)

The socioeconomic status scale was constructed as an additive scale from three measures contained in Questions 4 and 5 in Part IV of the questionnaire: father's occupation, father's education, and mother's education.[19]

Data on *father's occupation* was derived from students' self-reports to Question 5, which asked, "What are your parents' occupations?" Students were asked to indicate their fathers' occupations by choosing from a list of 15 nominal level occupational categories: (a) farm laborer, coded as "1"; (b) unskilled manual, coded as "2"; (c) unskilled clerical, sales, and service, coded as "3"; (d) semi-skilled manual, coded as "4"; (e) semi-skilled clerical, sales, and service, coded as "5"; (f) farmer, coded as "6"; (g) skilled crafts and

[18] Before recoding, age was moderately skewed to the right (1.833) and leptokurtic (3.379). After recoding, the skewness of age was reduced from 1.833 to 1.302 and kurtosis was reduced from 3.379 to 0.991.

[19] Mother's occupation was not included in the socioeconomic status scale because 18 cases were missing for this variable.

trades, coded as "7"; (h) skilled clerical, sales, and service, coded as "8"; (i) supervisor, coded as "9"; (j) middle manager in business or government, coded as "10"; (k) technician, coded as "11"; (l) semi-professional, coded as "12"; (m) high level manager, coded as "13"; (n) employed professional, coded as "14"; and (o) self-employed professional, coded as "15". This fifteen category coding scheme is based on the valid and reliable Pinneo-Porter McRoberts (PPM) (Pinneo, 1985) socioeconomic classification of Canadian occupations. The PPM classification reflects the skill level of an occupation and whether the occupation involves manual or non-manual labor.

The students in this sample had fathers employed in a wide range of occupational categories. Almost 40 percent of the students' fathers were employed in unskilled, semi-skilled, or skilled occupations, while 55 percent were employed as supervisors to self-employed professionals (this figure includes a relatively large number of students' fathers (19 percent) reported as employed professionals). Fourteen respondents (5 percent) did not indicate their fathers' occupations. The descriptive statistics for father's occupation are presented in Table 3.7. As the table shows, the distribution for this variable is slightly skewed to the left (-0.289) and platykurtic (-1.135).

Table 3.7:

Descriptive Statistics for Father's Occupation

Mean	10.008	Std. Deviation	3.881
Minimum	1.000	Maximum	15.000
Kurtosis	-1.135	Skewness	-0.289
S E Kurt	0.304	S E Skew	0.153
Std. Error	0.243	Missing Cases	14 (5%)

Data on *father's education* was obtained from students' responses to Question 4 of Part IV, which asked, "What was the highest level of education that your parents received?" Students were asked to indicate their fathers' education by choosing from a

list of nine ordinal level response categories: (a) elementary school, coded as "1"; (b) some high school, coded as "2"; (c) completed high school, coded as "3"; (d) some technical, vocational training, coded as "4"; (e) completed community college, coded as "5"; (f) some university, coded as "6"; (g) completed a Bachelor's degree (e.g.. B.Ed., B.A), coded as "7"; (h) some education at the graduate level, coded as "8"; and (i) completed graduate degree (e.g., M.Ed., Ph.D.), coded as "9". Data were missing for 8 respondents (3 percent). For over 50 percent of the respondents, the highest level of education received by their fathers was high school completion or less. Table 3.8 presents the descriptive statistics for father's education. As the table illustrates, the distribution for this variable is slightly skewed to the right (0.603) and platykurtic (-0.930).

Table 3.8:

Descriptive Statistics for Father's Education

Mean	4.042	Std. Deviation	2.541
Minimum	1.000	Maximum	9.000
Kurtosis	-0.930	Skewness	0.603
S E Kurt	0.300	S E Skew	0.151
Std. Error	0.157	Missing Cases	8 (3%)

Data on *mother's education* was also obtained from students' responses to Question 4 of Part IV. Data were missing for 5 respondents (2 percent). For approximately 54 percent of the respondents, the highest level of education received by their mothers was high school completion or less. Table 3.9 presents the descriptive statistics for mother's education. As the table illustrates, the distribution for this variable is slightly skewed to the right (0.552) and slightly platykurtic (-0.758).

Table 3.9:

Descriptive Statistics for Mother's Education

Mean	3.814	Std. Deviation	2.013
Minimum	1.000	Maximum	9.000
Kurtosis	-0.758	Skewness	0.552
S E Kurt	0.299	S E Skew	0.150
Std. Error	0.124	Missing Cases	5 (2%)

As noted earlier, the socioeconomic status scale was constructed as an additive scale from the three measures of father's occupation, father's education, and mother's education. Therefore, a score of '3' (2 multiplied by "1" elementary school, and added to "1" farm laborer) would indicate a low socioeconomic status, while a score of '33' (2 multiplied by "9" completed graduate degree, and added to "15" self-employed professional) would indicate a high socioeconomic status.

The inter-item correlations and principal component for the socioeconomic status scale are reported in Table 3.10. As the table shows, the correlations range from 0.30 to 0.59 and are well within the acceptable range for such scales. These correlations are high enough to suggest that the three items are all measuring the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the three items together.

The factor loadings appear in the array on the right-hand side of the table. When examining these scores, it is generally assumed that variation in the principal component causes variation in the items. In this context, a widely-accepted range for these scores is between 0.30 and 0.80 (see Kim & Mueller, 1976: 71). As the table illustrates, all factor loadings are within this range at 0.71, 0.88, and 0.80.

Table 3.10:

Inter-item Correlations and Principal Component (P/C) for Socioeconomic Status

Items	1.	2.	3.	P/C
1.	1.00			0.71
2.	0.48	1.00		0.88
3.	0.30	0.59	1.00	0.80

Eigenvalue = 1.92 Percent of Common Variance = 64.00

Table 3.11 presents the descriptive statistics for socioeconomic status. As the table illustrates, the distribution for this variable is very slightly skewed to the right (0.121) and slightly platykurtic (-0.936).

Table 3.11:

Descriptive Statistics for Socioeconomic Status

Mean	17.096	Std. Deviation	6.838
Minimum	3.000	Maximum	33.000
Kurtosis	-0.936	Skewness	0.121
S E Kurt	0.304	S E Skew	0.153
Std. Error	0.429	Missing Cases	15 (6%)

Quality of University Student Life Variables

Since there were no empirical indicators for measuring the quality of university student life when Roberts and Clifton began their research in 1987, their first task was to generate indicators for each dimension of the two domains. The initial list of indicators was then subjected to a content validity assessment by a panel of student and faculty judges. The original items designed to measure the domains are presented in Table 3.12:

Original Items Designed to Measure the Six Dimensions of the Cognitive Domain, and Table 3.13: Original Items Designed to Measure the Six Dimensions of the Affective Domain. In the questionnaire the cognitive demand items were prefaced by the phrase, "In the Faculty of Education I have learned . . .", and the affective items were prefaced by, "The Faculty of Education is a place where . . .". Each item contained a set of five response options ranging from definitely agree to definitely disagree. Refer to Appendix B: Quality of Life in the Faculty of Education Questionnaire (1987).

Table 3.12:

Original Items Designed to Measure the Six Dimensions of the Cognitive Domain [a]

Knowledge Dimension
- A considerable amount about the subject matter I plan to teach.
- A considerable amount about the methodology of teaching.
- The professional responsibilities of teachers.
- A considerable amount about the psychological development of children.
- A considerable amount about the socio-emotional development of children.

Comprehension Dimension
- To communicate clearly the subject matter I plan to teach.
- To write in a precise manner.
- To plan appropriate learning activities
- To speak in a clear and concise manner.

Application Dimension
- To evaluate the socio-emotional performances of students.
- To present lessons in a systematic manner.
- To evaluate the academic performance of students.
- To use a variety of teaching strategies.
- To use a variety of ways to maintain classroom discipline.

Analysis Dimension
- To analyze the theoretical perspectives of education.
- To assess teaching as a profession.
- To analyze teaching in terms of various models of teaching.

Synthesis Dimension
- To synthesize various perspectives in the subject I plan to teach.
- To combine elements of knowledge into new perspectives.
- To combine various teaching techniques.
- To combine information from a number of sources.

Evaluation Dimension
- To evaluate theoretical perspectives in education.
- To evaluate the subject areas I plan to teach.
- To examine my own teaching critically.
- To evaluate theories of classroom management.

[a] From Roberts & Clifton (1991: 28).

Table 3.13:

Original Items Designed to Measure the Six Dimensions of the Affective Domain [a]

Positive Affect Dimension
- I find it easy to get to know other people.
- I enjoy being.
- Students are friendly.
- I really like to go each day.
- I find that learning is a lot of fun.

Negative Affect Dimension
- I feel depressed.
- I feel restless.
- I feel lonely.
- I get upset.
- I feel worried.

Status Dimension
- I feel proud to be a student.
- People look up to me.
- People care about what I think.
- I am treated with respect.
- People think a lot of me.
- I feel important.
- I feel proud of myself.
- I get on well with other students in my class.

Identity Dimension
- The things I learn are important to me.
- Mixing with other people helps me understand myself.
- I am a success as a student.
- I learn to get along with other people.
- Other students accept me as I am.
- I have learned to work hard.

Professors Dimension
- Professors treat me fairly.
- Professors give me the marks I deserve.
- Professors take a personal interest in helping me with my work.
- Professors help me do my best.
- Professors are fair and just.
- Professors listen to what I say.

Opportunity Dimension
- I really get involved in my work.
- I like learning.
- I have acquired skills that will be of use to me.
- I achieve a satisfactory standard in my work.
- The things I learn will help me in my life.
- I know how to cope with work.
- I am given a chance to do work that really interests me.
- I know I can do well enough to be successful.
- The things I am taught are worthwhile learning.
- The work I do is good preparation for my future.

[a] From Roberts & Clifton (1991: 29-30).

Due to the fact that both theoretical and methodological difficulties can arise in exploratory research, Roberts and Clifton employed Piazza's (1980) construct validity testing procedure[20] for the analysis of attitude items, and then established each scale's reliability by reporting Cronbach's alpha reliability coefficients. The following two subsections will provide a brief overview of Roberts and Clifton's work in establishing construct validity and reliability of their cognitive and affective scales, and the operationalizations of cognitive and affective quality of life that will be used in this study.

The Cognitive Domain

The construct validity and reliability of the cognitive domain were first assessed by examining data on the 1987 Quality of Life in the Faculty of Education Questionnaire (Appendix B) obtained from a representative, stratified random cluster sample of 546 undergraduate and graduate education students from the University of Manitoba (Roberts & Clifton, 1991, 1992b). After employing Piazza's construct validity techniques and Cronbach's reliability assessment, Roberts and Clifton found that they could not find empirical support for their original conceptualization because students focused on the specific content of the statements as they related to the faculty of education.

The construct validity and reliability of the cognitive domain were once again assessed by examining 36 new indicators for each dimension of Bloom's taxonomy of the cognitive domain in the 1992 Quality of Life in the Faculty of Education Questionnaire (Appendix A) obtained from a representative, stratified random cluster sample of 269 undergraduate education students from the University of Manitoba (Clifton et al., in press). See Table 3.14: Revised Items Designed to Measure the Six Dimensions of the Cognitive Domain. After performing factor and correlational analyses, Roberts and

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[20] Piazza's (1980) techniques utilize a series of analyses involving progressively more rigorous requirements: confirmatory factor analysis, proportionality of correlations, and canonical correlations.

Clifton found that their cognitive items clustered together into two, as opposed to the six dimensions originally identified by Bloom et al. (1956). The first *structural* dimension includes the knowledge and comprehension dimensions from Bloom's taxonomy, and the second *functional* dimension includes the application, analysis, synthesis, and evaluation dimensions. The alpha reliabilities of two these scales were well above the acceptable standard for research procedures at 0.88 and 0.85 respectively. See Table 3.15: Final Items Selected to Measure the Two Dimensions of the Cognitive Domain.

Table 3.14:

Revised Items Designed to Measure the Six Dimensions of the Cognitive Domain [a]

In the Faculty of Education, I have been challenged to . . .

Knowledge Dimension
- Remember an extensive number of new terms.
- Recall a significant number of new concepts.
- Recall a lot of factual information.
- Remember a significant number of facts.
- Recall a significant number of facts.
- Remember complex facts.

Comprehension Dimension
- Translate complicated ideas into everyday language.
- Translate difficult concepts into my own words.
- Interpret the meaning of new facts and terms.
- Understand difficult ideas.
- Translate a variety of technical terms into ordinary language.
- Interpret the meaning of complicated charts and graphs.

Application Dimension
- Demonstrate how theories are useful in real life.
- Use theories to address practical questions.
- Illustrate abstract ideas with concrete examples.
- Use theoretical ideas to address practical problems.
- Apply theories to new situations.
- Apply theoretical principles in solving problems.

Analysis Dimension
- Identify organizing principles in my courses.
- Analyze complex interrelationships between concepts.
- Identify assumptions underlying theories.
- Identify reasoning underlying theories.
- Identify basic ideas in theories.
- Illustrate how the different aspects of my discipline are related.

Synthesis Dimension
- Design my own plans in completing assignments.
- Organize themes into ideas.
- Develop new ideas based on theories.
- Solve problems by integrating theories.
- Make original contributions to classroom discussions.
- Organize ideas in new ways.

Evaluation Dimension
- Logically defend a course of action.
- Evaluate alternative solutions to problems.
- Detect missing parts in arguments.
- Judge the logic of written arguments.
- Identify the strengths and weaknesses of arguments.
- Identify bias in written material.

[a] From Clifton et al. (in press).

Table 3.15:

Final Items Selected to Measure the Two Dimensions of the Cognitive Domain [a]

In the Faculty of Education, I have been challenged to . . .

Structural Dimension
- Remember an extensive number of new terms.
- Recall a substantial number of new concepts.
- Interpret the meaning of new facts and terms.
- Remember an extensive number of facts.
- Recall a significant number of facts.
- Remember complex facts.

(Cronbach's Alpha Reliability = 0.88)

Functional Dimension
- Demonstrate how theories are useful in real life.
- Identify organizing principles in my courses.
- Use theories to address practical questions.
- Analyze complex interrelationships between concepts.
- Develop new ideas based on theories.
- Apply theories in new situations.
- Make original contributions to classroom discussions.
- Identify the strengths and weaknesses of arguments.
- Apply theoretical principles in solving problems.
- Organize ideas in new ways.
- Identify bias in written material.

(Cronbach's Alpha Reliability = 0.85)

[a] From Clifton et al. (in press).

Cognitive Quality of University Student Life (COG)

Therefore, for the purposes of this study, a cognitive quality of university student life scale--constructed as a standardized additive scale from measures in the structural and functional scales--was included in the theoretical model.

Structural

The *structural scale* consisted of six items found in Part II of the questionnaire. Preceded by the phrase, "In the Faculty of Education, I have been challenged to . . .", the items in the structural scale include: (1) Remember an extensive number of new terms; (2) Recall a substantial number of new concepts; (3) Interpret the meaning of new facts and terms; (4) Remember an extensive number of facts; (5) Recall a significant number of facts; and (6) Remember complex facts. It was a Likert-type ordinal scale with four possible response options: (a) strongly disagree, coded as "1"; (b) disagree, coded as "2"; (c) agree, coded as "3"; and (d) strongly agree, coded as "4". Using this coding system, a score of '6' (6 multiplied by "1" strongly disagree) would indicate a low structural cognitive quality of student life, while a score of '24' (6 multiplied by "4" strongly agree) would indicate a high structural cognitive quality of life.

The inter-item correlations and principal component for the structural scale are reported in Table 3.16. As the table shows, the correlations range from 0.36 to 0.81 and are well within the acceptable range for such scales. These correlations are high enough to suggest that the six items are all measuring the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the six items together.

The factor loadings appear in the array on the right-hand side of the table. When examining these scores, it is generally assumed that variation in the principal component causes variation in the items. In this context, a widely-accepted range for these scores is between 0.30 and 0.80 (see Kim & Mueller, 1976: 71). As the table illustrates, all factor loadings are within this range.

Table 3.16:

Inter-item Correlations and Principal Component (P/C) for Structural

Items	1.	2.	3.	4.	5.	6.	P/C
1.	1.00						0.76
2.	0.59	1.00					0.72
3.	0.36	0.42	1.00				0.60
4.	0.59	0.53	0.40	1.00			0.89
5.	0.52	0.49	0.44	0.81	1.00		0.87
6.	0.57	0.46	0.41	0.78	0.77	1.00	0.86

Eigenvalue = 3.58 Percent of Common Variance = 62.60

The descriptive statistics for the structural scale are reported in Table 3.17. As the table shows, the distribution for this scale is very close to being normally distributed.

Table 3.17:

Descriptive Statistics for Structural

Mean	16.184	Std. Deviation	3.073
Minimum	7.000	Maximum	24.000
Kurtosis	0.157	Skewness	0.360
S E Kurt	0.300	S E Skew	0.151
Std. Error	3.073	Missing Cases	8 (3%)

Functional

The *functional scale* consisted of 11 items found in Part II of the questionnaire. Preceded by the phrase, "In the Faculty of Education, I have been challenged to . . .", the items in the functional scale include: (1) Demonstrate how theories are useful for real life; (2) Identify organizing principles in my courses; (3) Use theories to address practical questions; (4) Analyze complex interrelationships between concepts; (5) Develop new

ideas based on theories; (6) Apply theories to new situations; (7) Make original contributions to classroom discussions; (8) Identify the strengths and weaknesses of arguments; (9) Apply theoretical principles in solving problems; (10) Organize ideas in new ways; and (11) Identify bias in written material. Like the structural scale, it was a Likert-type ordinal scale with four possible response options ranging from strongly disagree, coded as "1", to strongly agree, coded as "4". Using this coding system, a score of '11' would indicate a low functional cognitive quality of life, while a score of '44' would indicate a high functional cognitive quality of life.

The inter-item correlations and principal component for the functional scale are reported in Table 3.18. As the table shows, the correlations range from 0.10 to 0.57--all within the acceptable range for such scales. The size of these correlations suggest that all 11 items measure the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the items together.

The factor loadings, which appear in the right-hand column of the table, range from 0.46 to 0.74. This suggests that all 11 items are moderately to highly related to the principal component.

Table 3.18:

Inter-item Correlations and Principal Component (P/C) for Functional

Items	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	P/C
1.	1.00											0.69
2.	0.38	1.00										0.53
3.	0.51	0.37	1.00									0.68
4.	0.37	0.32	0.57	1.00								0.69
5.	0.36	0.40	0.36	0.38	1.00							0.70
6.	0.48	0.28	0.46	0.46	0.49	1.00						0.74
7.	0.28	0.10	0.21	0.21	0.25	0.22	1.00					0.46
8.	0.32	0.22	0.26	0.40	0.41	0.39	0.41	1.00				0.66
9.	0.43	0.22	0.37	0.39	0.47	0.51	0.23	0.41	1.00			0.67
10.	0.33	0.33	0.27	0.33	0.39	0.37	0.30	0.38	0.28	1.00		0.60
11.	0.29	0.14	0.27	0.26	0.29	0.32	0.23	0.44	0.23	0.29	1.00	0.52

Eigenvalue = 4.46 Percent of Common Variance = 40.50

The descriptive statistics for the functional scale are reported in Table 3.19. As the table shows, the distribution for this scale is moderately leptokurtic and very slightly skewed to the left.

Table 3.19:

Descriptive Statistics for Functional

Mean	30.710	Std. Deviation	4.168
Minimum	13.000	Maximum	43.000
Kurtosis	1.233	Skewness	-0.236
S E Kurt	0.304	S E Skew	0.153
Std. Error	0.261	Missing Cases	14 (5%)

As noted earlier, the cognitive quality of university student life scale was constructed as an standardized additive scale from the two measures of structural and functional. Therefore, a score of '1' ("1" strongly disagree) would indicate a low cognitive

quality of student life, while a score of '4' ("4" strongly agree) would indicate a high cognitive quality of student life.

The inter-item correlations and principal component for the cognitive quality of university student life scale are reported in Table 3.20. As the table shows, the correlation between the structural domain and the functional domain is 0.29--high enough to suggest that both items are measuring the same construct. The factor loadings of 0.80, which appear in the right-hand column of the table, also suggest that both items are highly related to the principal component.

Table 3.20:

Inter-item Correlations and Principal Component (P/C) for Cognitive Quality of University Student Life

Items	1.	2.	P/C
1.	1.00		0.80
2.	0.29	1.00	0.80
Eigenvalue = 1.29		Percent of Common Variance = 64.30	

Table 3.21 presents the descriptive statistics for the cognitive quality of university student life scale. As the table illustrates, the distribution for this variable is very slightly skewed to the right (0.330) and leptokurtic (1.132).

Table 3.21:

Descriptive Statistics for Cognitive Quality of University Student Life

Mean	2.744	Std. Deviation	0.359
Minimum	1.530	Maximum	3.871
Kurtosis	1.132	Skewness	0.330
S E Kurt	0.304	S E Skew	0.153
Std. Error	0.023	Missing Cases	15 (6%)

The Affective Domain

The construct validity and reliability of the affective domain was assessed once by examining data on the 1987 Quality of Life in the Faculty of Education Questionnaire (Appendix B) obtained from the sample of 546 students, which was described above (Roberts & Clifton, 1991, 1992a).

After performing factor and correlational analyses, Roberts and Clifton found that their affective items clustered together into four, as opposed to the six dimensions identified by Williams and Batten (1981). The four scales of the affective domain included: positive affect, interaction with students, interaction with professors, and negative affect. Positive affect and negative affect are general measures that portray student experiences in the faculty context, while interaction with students and interactions with professors portray the quality of student interactions with significant others. The alpha reliabilities of these scales were well above the acceptable standard for research procedures at 0.93, 0.75, 0.90, and 0.79 respectively. See Table 3.22: Final Items Selected to Measure the Four Dimensions of the Affective Domain.

Table 3.22:

Final Items Selected to Measure the Four Dimensions of the Affective Domain [a]

The Faculty of Education is a place where . . .

Positive Affect Dimension
- The things I learn are important to me.
- People look up to me.
- I really get involved in my work.
- I like learning.
- I enjoy being.
- I have acquired skills that will be of use to me.
- The things I learn will help me in my life.
- I am given the chance to do work that really interests me.
- The things I am taught are worthwhile learning.
- I really like to go each day.
- The work I do is good preparation for my future.
- I have learned to work hard.
- I find that learning is a lot of fun.

(Cronbach's Alpha Reliability = 0.93)

Negative Affect Dimension
- I feel depressed.
- I feel restless.
- I get upset.
- I feel worried.

(Cronbach's Alpha Reliability = 0.79)

Interaction with Professors
- Professors treat me fairly.
- Professors give me the marks I deserve.
- I achieve a satisfactory standard in my work.
- People care about what I think.
- Professors take a personal interest in helping me with my work.
- I am treated with respect.
- Professors help me do my best.
- Professors are fair and just.
- Professors listen to what I say.

(Cronbach's Alpha Reliability = 0.90)

Interaction with Students
- I find it easy to get to know other people.
- Mixing with other people helps me to understand myself.
- People think a lot of me.
- Other students accept me as I am.
- I get on well with the other students in my class.

(Cronbach's Alpha Reliability = 0.75)

[a] From Roberts & Clifton (1992a: 132).

Affective Quality of University Student Life (AFF)

Therefore, for the purposes of this study, an affective quality of university student life scale--constructed as a standardized additive scale from measures in the positive

affect, interaction with professors, and interaction with students scales--was included in the theoretical model.

Positive Affect

The *positive affect scale* consisted of 13 items found in Part I of the questionnaire. Preceded by the phrase, "The Faculty of Education is a place where . . .", the items in the positive affect scale include: (1) The things I learn are important to me; (2) People look up to me; (3) I really get involved in my work; (4) I like learning; (5) I enjoy being; (6) I have acquired skills that will be of use to me; (7) The things I learn will help me in my life; (8) I really like to go each day; (9) The work I do is good preparation for my future; (10) I really like to go each day; (11) The work I do is good preparation for my future; (12) I have learned to work hard; and (13) I find that learning is a lot of fun. Like the cognitive scales, this and the following two affective scales were Likert-type ordinal scales with four possible response options ranging from strongly disagree, coded as "1", to strongly agree, coded as "4". Using this coding system, a score of '13' (13 multiplied by "1" strongly disagree) would indicate low positive affect, while a score of '52' (13 multiplied by "4" strongly agree) would indicate high positive affect.

The inter-item correlations and principal component for the positive affect scale are reported in Table 3.23. As the table shows, the correlations range from 0.01 to 0.68--all within the acceptable range for such scales. The size of these correlations suggest that all 13 items measure the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the items together.

The factor loadings, which appear in the right-hand column of the table, range from 0.28 to 0.79. This suggests that all 13 items are moderately to highly related to the principal component.

Table 3.23:

Inter-item Correlations and Principal Component (P/C) for Positive Affect

Items	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	P/C
1.	1.00													0.60
2.	0.83	1.00												0.28
3.	0.31	0.21	1.00											0.64
4.	0.30	0.01	0.48	1.00										0.61
5.	0.22	0.28	0.50	0.51	1.00									0.64
6.	0.40	0.18	0.36	0.31	0.32	1.00								0.74
7.	0.46	0.20	0.41	0.38	0.37	0.57	1.00							0.75
8.	0.46	0.14	0.33	0.32	0.36	0.60	0.48	1.00						0.74
9.	0.48	0.10	0.30	0.37	0.36	0.60	0.58	0.68	1.00					0.78
10.	0.32	0.27	0.40	0.30	0.50	0.39	0.39	0.42	0.50	1.00				0.68
11.	0.50	0.17	0.36	0.32	0.36	0.68	0.61	0.63	0.67	0.45	1.00			0.79
12.	0.27	0.15	0.53	0.36	0.35	0.32	0.30	0.29	0.32	0.35	0.34	1.00		0.56
13.	0.23	0.11	0.39	0.53	0.42	0.37	0.43	0.32	0.40	0.50	0.39	0.34	1.00	0.64

Eigenvalue = 5.68 Percent of Common Variance = 43.70

The descriptive statistics for the positive affect scale are reported in Table 3.24. As the table shows, the distribution for this scale is slightly leptokurtic and slightly skewed to the left.

Table 3.24:

Descriptive Statistics for Positive Affect

Mean	36.813	Std. Deviation	5.483
Minimum	17.000	Maximum	48.000
Kurtosis	0.639	Skewness	-0.559
S E Kurt	0.306	S E Skew	0.153
Std. Error	0.345	Missing Cases	17 (6%)

Interaction with Professors

The *interaction with professors scale* consisted of nine items found in Part I. Preceded by the phrase, "The Faculty of Education is a place where . . .", the items in the interaction with professors scale include: (1) Professors treat me fairly; (2) Professors give me the marks I deserve; (3) I achieve a satisfactory standard in my work; (4) People care about what I think; (5) Professors take a personal interest in helping me with my work; (6) I am treated with respect; (7) Professors help me to do my best; (8) Professors are fair and just; and (9) Professors listen to what I say. Using the coding system described above, a score of '9' (9 multiplied by "1" strongly disagree) would indicate low interaction with professors, while a score of '36' (9 multiplied by "4" strongly agree) would indicate high interaction.

The inter-item correlations and principal component for the interaction with professors scale are reported in Table 3.25. As the table shows, the correlations range from 0.08 to 0.68--all within the acceptable range for such scales. The size of these correlations suggest that all nine items measure the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the items together.

The factor loadings, which appear in the right-hand column of the table, range from 0.39 to 0.75. This suggests that all nine items are moderately to highly related to the principal component.

Table 3.25:

Inter-item Correlations and Principal Component (P/C) for Interaction with Professors

Items	1.	2.	3.	4.	5.	6.	7.	8.	9.	P/C
1.	1.00									0.68
2.	0.47	1.00								0.68
3.	0.13	0.41	1.00							0.39
4.	0.27	0.25	0.22	1.00						0.60
5.	0.28	0.29	0.08	0.37	1.00					0.60
6.	0.42	0.30	0.12	0.43	0.40	1.00				0.62
7.	0.39	0.38	0.13	0.33	0.68	0.34	1.00			0.75
8.	0.53	0.61	0.32	0.24	0.30	0.28	0.48	1.00		0.73
9.	0.38	0.25	0.18	0.46	0.36	0.34	0.47	0.41	1.00	0.67

Eigenvalue = 3.80 Percent of Common Variance = 42.30

The descriptive statistics for the interaction with professors scale are reported in Table 3.26. As the table shows, the distribution for this scale is leptokurtic and slightly skewed to the left.

Table 3.26:

Descriptive Statistics for Interaction with Professors

Mean	26.020	Std. Deviation	3.003
Minimum	10.000	Maximum	35.000
Kurtosis	3.443	Skewness	-0.547
S E Kurt	0.305	S E Skew	0.153
Std. Error	0.189	Missing Cases	16 (6%)

Interaction with Students

Finally, the *interaction with students scale* consisted of five items found in Part I. Preceded by the phrase, "The Faculty of Education is a place where . . .", the items in the

interaction with students scale include: (1) I find it easy to get to know other people; (2) Mixing with other people helps me to understand myself; (3) People think a lot of me; (4) Other students accept me as I am; and (5) I get on well with the other students in my class. A score of '5' (5 multiplied by "1" strongly disagree) would indicate low interaction with students, while a score of '20' (5 multiplied by "4" strongly agree) would indicate high interaction.

The inter-item correlations and principal component for the interaction with students scale are reported in Table 3.27. As the table shows, the correlations range from 0.19 to 0.47--all within the acceptable range for such scales. The size of these correlations suggest that all five items measure the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the items together.

The factor loadings, which appear in the right-hand column of the table, range from 0.64 to 0.77. This suggests that all five items are moderately to highly related to the principal component.

Table 3.27:

Inter-item Correlations and Principal Component (P/C) for Interaction with Students

Items	1.	2.	3.	4.	5.	P/C
1.	1.00					0.67
2.	0.32	1.00				0.68
3.	0.33	0.39	1.00			0.66
4.	0.27	0.29	0.19	1.00		0.64
5.	0.39	0.36	0.38	0.47	1.00	0.77

Eigenvalue = 2.36 Percent of Common Variance = 47.20

The descriptive statistics for the interaction with students scale are reported in Table 3.28. As the table shows, the distribution for this scale is leptokurtic and slightly skewed to the left.

Table 3.28:

Descriptive Statistics for Interaction with Students

Mean	14.744	Std. Deviation	1.964
Minimum	5.000	Maximum	20.000
Kurtosis	2.056	Skewness	-0.451
S E Kurt	0.304	S E Skew	0.153
Std. Error	0.123	Missing Cases	15 (6%)

As noted earlier, the affective quality of university student life scale was constructed as an standardized additive scale from the three measures of positive affect, interaction with professors, and interaction with students. Therefore, a score of '1' ("1" strongly disagree) would indicate a low affective quality of student life, while a score of '4' ("4" strongly agree) would indicate a high affective quality of student life.

The inter-item correlations and principal component for the affective quality of university student life scale are reported in Table 3.29. As the table shows, the correlations between these three domains range from 0.41 to 0.58--high enough to suggest that the three items are measuring the same construct. The factor loadings, which appear in the right-hand column of the table, between 0.73 and 0.84, also suggest that all three items are highly related to the principal component.

Table 3.29:

Inter-item Correlations and Principal Component (P/C) for Affective Quality of University Student Life

Items	1.	2.	3.	P/C
1.	1.00			0.84
2.	0.58	1.00		0.84
3.	0.41	0.41	1.00	0.73

Eigenvalue = 1.93 Percent of Common Variance = 64.40

Table 3.30 presents the descriptive statistics for the affective quality of university student life scale. As the table illustrates, the distribution for this variable is slightly skewed to the left (-0.606) and leptokurtic (3.227).

Table 3.30:

Descriptive Statistics for Affective Quality of University Student Life

Mean	2.888	Std. Deviation	0.309
Minimum	1.140	Maximum	3.660
Kurtosis	3.227	Skewness	-0.606
S E Kurt	0.310	S E Skew	0.156
Std. Error	0.020	Missing Cases	25 (9%)

Individual Social Psychological Variables

Two individual social psychological variables were included in the theoretical model: (a) self-concept of ability, and (b) alienation.

Self-Concept of Ability (SCABIL)

Self-concept of ability is but one type of self-concept that refers to how people feel about their own academic abilities. Based on Brookover, Erickson, and Joiner's

(1967) *self-concept of ability scale*, Question 1 through 9 in Section 3 of Part III asked students to rate their self-concept of ability and achievement in relation to the perceived expectations of parents, peers, and student-selected significant others.

The scale consists of nine items with five ordinal response options for each. First, in Question 1, students were asked, "Think of your university friends. [How] Do you think you can do your university course work . . .". In Question 2 students were asked, "Think of the students in your faculty. [How] Do you think you can do your university course work . . .". Question 3 asked, "When you complete your undergraduate degree, [how] do you think that you will be . . .". For these first three questions, the five ordinal response options included: (a) poorer than all of them, coded as "1"; (b) poorer than most of them, coded as "2"; (c) about the same, coded as "3"; (d) better than most of them, coded as "4"; and (e) better than all of them, coded as "5". Question 4 asked, "Do you think you have the ability to complete a doctoral degree?" and the response categories included: (a) no, for sure, coded as "1"; (b) no, probably not, coded as "2"; (c) maybe, coded as "3"; (d) yes, probably, coded as "4"; and (e) yes, for sure, coded as "5". Next, in Question 5, students were asked: "Forget how professors grade your work. How good do you think your work is?" The response options ranged from poor, coded as "1", to excellent, coded as "5". Question 6 through 9 asked students about educational expectations. Question 6 asked: "How far do *you* believe you will go in university?" Question 7 through 9 asked the same question replacing *you*, with "your parents", "your peers", and "your most significant other" respectively. For these final four questions, the five ordinal response options included: (a) less than a bachelor's degree, coded as "1"; (b) a bachelor's degree, coded as "2"; (c) a second bachelor's degree, coded as "3"; (d) a master's degree, coded as "4"; and (e) a doctoral degree, coded as "5".

Using this coding system for nine questions, a score of '9' (9 multiplied by "1" poorer than all of them, no for sure, poor, and less than a bachelor's degree) would indicate a low self-concept of ability, while a score of '45' (9 multiplied by "5" better than

all of them, yes for sure, excellent, and a doctoral degree) would indicate a high self-concept of ability.

The inter-item correlations and principal component for the self-concept of ability scale are reported in Table 3.31. As the table shows, the correlations range from 0.13 to 0.72--all within the acceptable range for such scales. The size of these correlations suggest that all nine items measure the same general construct. Although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the items together.

The factor loadings, which appear in the right-hand column of the table, range from 0.40 to 0.83. This suggests that all nine items are moderately to highly related to the principal component.

Table 3.31:

Inter-item Correlations and Principal Component (P/C) for Self-Concept of Ability

Items	1.	2.	3.	4.	5.	6.	7.	8.	9.	P/C
1.	1.00									0.42
2.	0.50	1.00								0.47
3.	0.19	0.30	1.00							0.40
4.	0.25	0.31	0.25	1.00						0.67
5.	0.23	0.32	0.31	0.40	1.00					0.49
6.	0.19	0.28	0.20	0.46	0.26	1.00				0.83
7.	0.21	0.12	0.19	0.36	0.13	0.61	1.00			0.74
8.	0.21	0.21	0.18	0.41	0.26	0.63	0.69	1.00		0.81
9.	0.08	0.13	0.16	0.38	0.21	0.72	0.57	0.65	1.00	0.76

Eigenvalue = 3.70 Percent of Common Variance = 41.20

The descriptive statistics for the self-concept of ability scale are reported in Table 3.32. As the table shows, the distribution for this scale is slightly platykurtic and slightly skewed to the right.

Table 3.32:

Descriptive Statistics for Self-Concept of Ability

Mean	30.100	Std. Deviation	4.721
Minimum	18.000	Maximum	42.000
Kurtosis	-0.636	Skewness	0.237
S E Kurt	0.312	S E Skew	0.157
Std. Error	0.304	Missing Cases	28 (10%)

Alienation (ALIEN)

Based on Blumenkrantz and Tapp's (1977) Classroom Alienation Scale,[21] an *alienation scale* specific to academic settings was constructed from 18 of the 21 items found in Section 2 of Part III of the questionnaire. It was a Likert-type ordinal scale with four possible response options ranging from strongly disagree, coded as "1", to strongly agree, coded as "4". Preceded by the phrase, "Please think about the experiences students have in this faculty, and give your opinion about each of the following statements . . .", the 18 items in the alienation scale include: (1) It is almost impossible for one student to really understand the feelings of another; (2) Too many people in this faculty are just out for themselves; (3) These days, students do not really know who to count on; (4) There is

[21] The reader should note that the items in this scale roughly approximate the five variants of alienation as suggested by Seeman (1959): meaninglessness, self-estrangement, normlessness, powerlessness, and social isolation. *Meaninglessness* refers to the individual's sense of comprehensibility of events and conditions; *self-estrangement* refers to the individual's sense of personal authenticity and satisfaction; *normlessness* refers to the individual's sense of social standards; *powerlessness* refers to the individual's sense of control in social relations; and *social isolation* refers to the individual's sense of community membership.

not much chance that students will do anything to make this faculty a better place to learn; (5) Success in this faculty is more dependent on luck than on real ability; (6) There is no one in this faculty that students can really trust; (7) In spite of what some people say, the lot of the student is getting worse; (8) There is little use in talking to professors because they are not interested in the problems of students; (9) Most students do not realize how much their lives are controlled by the decisions made by others; (10) Few students look forward to their course work; (11) Most students play an active role in class (reverse scored);[22] (12) It is really best to tell professors what they want to hear; (13) Students will do almost anything to get good grades; (14) Most students do not enjoy their courses but do the work in order to get the things they want; (15) The grades students receive will be an accurate reflection of their true ability; (16) There are many students who do not know what to do with their lives; (17) Many students in this faculty are lonely; and (18) Students are unhappy because they do not know what they want out of life.[23]

By employing the coding system described above, a score of '18' (18 multiplied by "1" strongly disagree) would indicate low alienation, while a score of '72' (18 multiplied by "4" strongly agree) would indicate high alienation.

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[22] It is important to note that this item was reverse coded because it appeared in the positive form in the questionnaire.

[23] Three items in the original operationalization of alienation were not included in this study's alienation scale; these items include: (1) If classes were smaller, grades would better reflect true ability; (2) The final grades students receive will have an effect on their future status (reverse scored); and (3) Students expect to learn a lot in this faculty (reverse scored). These items were omitted because their item-total correlations (when all 21 items were included in the total alienation scale) were very low at 0.14, 0.13, and 0.16 respectively. In addition, the factor loadings of the principal component for the alienation scale (with all 21 items included) were not in the widely-accepted range between 0.30 and 0.80 (see Kim & Mueller, 1976: 71)--their factor loadings were very low at 0.07, 0.04, and 0.05 respectively.

The inter-item correlations and principal component for the alienation scale are reported in Table 3.33. As the table shows, the correlations range from -0.02 to 0.54. There is only one negative correlation and it is, for all practical purposes, zero; and, although some items are more highly interrelated than others, they are all moderately to highly related to the principal component, which is computed by adding the items together.

The factor loadings, which appear in the right-hand column of the table, range from 0.29 to 0.61. This suggests that all 18 items are moderately to highly related to the principal component.

Table 3.33:

Inter-item Correlations and Principal Component (P/C) for Alienation

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	P/C
1.	1.00																		0.32
2.	0.25	1.00																	0.56
3.	0.24	0.43	1.00																0.61
4.	0.04	0.29	0.39	1.00															0.54
5.	0.19	0.20	0.30	0.20	1.00														0.59
6.	0.26	0.34	0.31	0.44	0.41	1.00													0.62
7.	0.12	0.26	0.26	0.28	0.30	0.34	1.00												0.57
8.	0.15	0.30	0.31	0.37	0.29	0.51	0.30	1.00											0.58
9.	0.09	0.13	0.23	0.17	0.18	0.11	0.27	0.12	1.00										0.41
10.	0.15	0.08	0.16	0.04	0.28	0.06	0.13	0.15	0.16	1.00									0.40
11.	0.07	0.20	0.15	0.24	0.14	0.12	0.19	0.14	0.07	0.26	1.00								0.39
12.	0.06	0.17	0.18	0.20	0.37	0.17	0.38	0.29	0.19	0.15	0.09	1.00							0.49
13.	0.08	0.15	0.02	0.07	0.19	0.16	0.03	0.09	0.17	0.13	0.09	0.23	1.00						0.32
14.	0.10	0.18	0.30	0.22	0.29	0.22	0.21	0.27	0.16	0.39	0.22	0.24	0.33	1.00					0.58
15.	0.06	0.22	0.16	0.05	0.24	0.10	0.15	0.03	0.05	0.04	0.18	0.12	0.18	0.25	1.00				0.29
16.	0.01	0.10	0.24	0.16	0.04	0.05	0.12	0.10	0.24	0.09	0.11	0.07	0.09	0.24	0.08	1.00			0.38
17.	0.14	0.26	0.21	0.16	0.25	0.25	0.33	0.22	0.25	0.23	0.24	0.21	0.07	0.20	-0.02	0.32	1.00		0.56
18.	0.03	0.17	0.20	0.13	0.10	0.16	0.07	0.10	0.19	0.17	0.08	0.06	0.08	0.28	0.04	0.54	0.46	1.00	0.42

Eigenvalue = 4.35 Percent of Common Variance = 24.20

The descriptive statistics for the alienation scale are reported in Table 3.34. As the table shows, the distribution for this scale is slightly leptokurtic and slightly skewed to the right.

Table 3.34:

Descriptive Statistics for Alienation

Mean	45.668	Std. Deviation	5.740
Minimum	32.000	Maximum	68.000
Kurtosis	1.037	Skewness	0.687
S E Kurt	0.318	S E Skew	0.160
Std. Error	0.377	Missing Cases	37 (14%)

Academic Attainment Variable

Finally, one academic attainment variable was included in the theoretical model: grade point average.

Grade Point Average (GPA)

Question 6 of Part V of the questionnaire asked students to indicate their *grade point average*, or GPA. Specifically, the question asked, "What is your cumulative grade point average?" Respondents were offered eight ordinal level choices, each of which represented a range of GPAs. Coded values for each of the choices were assigned as follows: GPAs of 0.0 to 0.9 were coded as "1"; GPAs of 1.0 to 1.4 were coded as "2"; GPAs of 1.5 to 1.9 were coded as "3"; GPAs of 2.0 to 2.4 were coded as "4"; GPAs of 2.5 to 2.9 were coded as "5"; GPAs of 3.0 to 3.4 were coded as "6"; GPAs of 3.5 to 3.9 were coded as "7"; and GPAs of 4.0 to 4.5 were coded as "8". Data were missing for 12 respondents (5 percent). Approximately 91 percent of the respondents reported GPAs between 2.5 and 3.9.[24] Table 3.34 reports the descriptive statistics for grade point

[24] Five cases with GPAs of "1", "2", and "3" could be considered univariate outliers.

average. As the table shows, the distribution for this variable is leptokurtic and skewed to the left.

Table 3.35:

Descriptive Statistics for Grade Point Average

Mean	5.899	Std. Deviation	1.063
Minimum	1.000	Maximum	8.000
Kurtosis	3.064	Skewness	-1.015
S E Kurt	0.303	S E Skew	0.152
Std. Error	0.066	Missing Cases	12 (5%)

Analysis Procedures

The data analysis techniques that are employed to test this theoretical model are the "structural equation modeling" (Bynner & Romney, 1985) procedures of multiple regression and path analysis.

Structural Equation Modeling

In some natural and social sciences, the experiment is the traditional means of verifying causal connections. However, in social sciences like sociology, the random assignment of subjects into experimental and control groups and the direct manipulation of variables is virtually impossible; for this reason, sociologists have come to depend on the analysis of survey data for testing causal relationships. Structural equation modeling is one of the most effective ways to test causal relationships. In short, this procedure involves diagramming out interrelationships between independent and dependent variables and then testing them through a series of regression analyses (see Davis, 1971).

They were not deleted, however, because of the small sample size and the fact that they are considered to be conceptually relevant categories.

A distinct advantage of this approach is that it not only forces a researcher to think in a systematic and explicit manner, but it also forces him or her to test ideas in a systematic and explicit manner (Boyle, 1970: 479).

Structural equation models include both exogenous and endogenous variables. *Exogenous* variables are those whose variability is assumed to be caused by variables outside the model in question and whose cause is not under investigation. *Endogenous* variables, on the other hand, are variables that are assumed to be determined by exogenous or other endogenous variables in the model and whose cause is of interest. For the theoretical model in this study, the social background and university background variables are exogenous, and the quality of university student life, social psychological and academic attainment variables are endogenous. Refer to Figure 3.1.

To test the effect parameters of a structural equation model, a set of equations--in both unstandardized and standardized form--is used. With both equations, the effect parameters indicate the amount of variation in the dependent variable that results from a one unit change in an independent variable when all other independent variables in the model are controlled. In the standardized equation, each variable has a mean of zero and a standard deviation of one, and in the unstandardized equation, each variable has a mean and standard deviation that depend on its specific units of measurement. Standardized coefficients (beta weights) permit the comparison of the effects associated with a number of independent variables on a common dependent variable, even when the independent variables are measured on different scales. As a result, the researcher is able to see the relative effects that each one of the independent variables has on the dependent variable.

Both multiple regression and path analysis are structural equation modeling procedures. The multiple regression model is one of the most widely used multivariate techniques in the social sciences for studying causal relationships between one dependent variable and several independent variables (Halli & Rao, 1992: 64). While regression examines only the direct effects of the independent variables on the dependent variable,

an application of path analysis allows the researcher to decompose the correlations between variables in the model into direct and indirect effects. The assumptions of these statistical techniques include: variables measured on an interval level, an acceptable cases-to-independent variable ratio, randomness of missing data, normality, linearity, homoscedasticity, an absence of outliers, and an absence of multicollinearity.

In accordance with these statistical procedures, the theoretical model will be tested through three separate analyses. In the first analysis, the effects of social background and university background on both the affective and cognitive domains of quality of life of university students will be examined. In the second analysis, the effects of social background, university background, and quality of life of university students on the self-concept of ability and alienation of students will be examined. In the final analysis, the effects of social background, university background, quality of life of university students, self-concept of ability, and alienation of university students on the academic attainment of students will be examined. The literature that provides a justification for the theoretically anticipated relationships between the variables in each one of the three analyses will be reviewed in Chapter IV.

In sum, it is expected that cognitive quality of life, affective quality of life, self-concept of ability, and alienation will account for an appreciable amount of variance in academic attainment, beyond that which is attributable to the university and student background characteristics. Thus, in order for students to realize their academic potential, several conditions must be present. First, they must experience programs that are both demanding in the cognitive domain and warm in the affective domain. Second, they must experience the university environment as non-alienating and have the academic self-concepts that are adequate to cope with the demands of a university education. Alternately, if students do not have such experiences and do not possess such personal attributes, they are less likely to achieve their academic potential.

Univariate and Bivariate Assumptions

To conclude this chapter's methodological discussion, the univariate and bivariate assumptions of structural equation modeling are addressed for all variables in the theoretical model. These assumptions include: interval level variables, normality, homoscedasticity, and linearity. In the succeeding chapter, the multivariate assumptions will be discussed.

In the past, researchers have argued that, in order to use parametric statistics such as multiple regression and path analysis, variables must be measured at either the interval or ratio levels. At the present time, however, many researchers presume that parametric statistics, especially multiple regression, are robust enough that they can be used with data that do not meet these criteria (see Asher, 1976; Babbie, 1992; Dometrius, 1992; Pedhazur, 1982). In this study, all of the variables included in the theoretical model are measured at least at the ordinal level, with the exception of gender and program--which are measured on the nominal level. To permit these variables to be used in structural equation models, their effect parameters are calculated using dummy variable analysis. Gender and program are recoded into dichotomous dummy variables: "male" and "female", and "elementary" and "secondary" respectively. A response coded "1" for gender refers to "females", while a response coded as "0" implies "males"--the baseline group for comparison purposes. Similarly, a response coded as "1" for program denotes "secondary", while a response coded as "0" signifies "elementary"--the baseline group for comparison purposes.

In addition, a theoretical normal distribution is required for all procedures using structural equation modeling. Normality is the assumption that each variable and all linear combinations of the variables are normally distributed. To check the univariate normality of the data, the frequency distributions (superimposed with a normal curve) for all variables were examined. As noted in the section on Measurement of Variables in the

Theoretical Model, these distributions were more or less normal--the majority of scores were found in the middle of the distributions with no extreme outliers found in the tails. In addition, skewness and kurtosis levels were examined, and generally speaking, these levels were relatively close to zero. This implied that the univariate assumption of normality has been satisfied.

The assumption of homoscedasticity, which is defined as equal variability of a given variable at all levels of all other variables, is also tested. Researchers frequently employ bivariate scatterplots to test for homoscedasticity. When various pairs of variables in the model were plotted against each other, it is evident that each distribution was more or less even, as opposed to being uneven. This suggests that the assumption of homoscedasticity has been met at the bivariate level.

Finally, the assumption of linearity is also verified. A relationship between two variables is linear when it can be represented by a straight line. Like the previous assumption of homoscedasticity, linearity is also assessed by visually inspecting bivariate scatterplots. To satisfy both assumptions, scatterplots should approximate a straight-line and be oval shaped, and upon examination of the plots, this was indeed the case. This finding not only indicates that the bivariate assumptions of homoscedasticity and linearity have been met, it also suggests that these assumptions will probably be verified at the multivariate level as well.

Summary

In this chapter, five major aspects of the methodology used in this study were examined. In the first section, a background was provided; it was explained that the data used in the present study were collected as part of the 1992 Quality of Student Life questionnaire in the Faculty of Education at the University of Manitoba. In the second section, the random cluster sampling procedure that was employed to select the sample of undergraduate education students was described. This was followed by a detailed

presentation of the contents of the Quality of Student Life questionnaire in the third section. The questionnaire was designed to measure: (a) students' perceptions of the cognitive demandingness of their classes; (b) students' perceptions of the affective warmth in their classrooms; (c) the entering characteristics of students; (d) students' grades; and (e) students' destinations upon graduation. In the fourth section, the measurement of all variables contained in the theoretical model was described in detail. The first block of variables included three university background variables: year of university, number of credit hours, and program, as well as three social background variables: gender, age, and socioeconomic status. The next block of variables included two measures of quality of student life: cognitive and affective quality of university student life variables. The third block included two measures of individual social psychological dispositions: self-concept of ability and alienation. The final block consisted of one measure of academic attainment: grade point average. Descriptive statistics for all the variables were provided, as well as inter-item correlations and principal component scores for those variables that were measured as scales. In the final methodological section, the rationale behind the structural equation modeling procedures of multiple regression and path analysis was described to prepare readers for the ensuing chapter's presentation of results.

CHAPTER IV

RESULTS

In this chapter, the theoretical model guiding this study is empirically tested. Before the results are presented, however, the multivariate assumptions of the structural equation modeling procedures utilized in the data analysis are discussed and verified. These assumptions include: normality, linearity, and homoscedasticity; multicollinearity; outliers; ratio of cases to independent variables; and missing data. A review of these assumptions prepare the reader for the detailed presentation of the results of the multiple regression and path analyses. First, the zero-order correlation matrix for all 11 variables in the model is briefly discussed. This is followed by a presentation of results from three main multivariate analyses. In the first analysis, the effects of social background and university background on both the affective and cognitive domains of quality of life of university students are examined. In the second analysis, the effects of social background, university background, and quality of life of university students on the self-concept of ability and alienation of students are examined. In the final analysis, the effects of social background, university background, quality of life of university students, self-concept of ability, and alienation of university students on the academic attainment of students are examined. Finally, this presentation of results concludes with a discussion of an interaction effect between the cognitive and the affective domains of the quality of life of university students.

Multivariate Assumptions

As noted in Chapter III, all eleven variables in the theoretical model are relatively close to being normally distributed at the univariate and bivariate levels. However, according to Tabachnick and Fidell (1989) and Halli and Rao (1992), while verifying assumptions at the univariate and bivariate levels is important in early phases of research,

their verification alone is not sufficient if researchers intend to perform multivariate analyses. Theoretically, all variables in the model are required to satisfy the assumptions of normality, linearity, and homoscedasticity at the univariate, bivariate, and multivariate levels. In addition, the assumptions of an absence of multicollinearity, an absence of outliers, an acceptable ratio of cases to independent variables, and randomly patterned missing data are also important.

Normality, Linearity, and Homoscedasticity

The assumptions of normality, linearity, and homoscedasticity were verified at the multivariate level by examining residual scatterplots, normal probability plots, and histograms of the standardized residuals, all of which are available with the Statistical Package for the Social Sciences (SPSS): the software used to conduct all of the statistical analyses reported in this project.

First, an examination of residual scatterplots provided a test of the assumptions of normality, linearity, and homoscedasticity between predicted dependent variable scores and errors of prediction. Multiple regression analysis assumes that the residuals, differences between obtained and predicted dependent variable scores, are normally distributed about the predicted scores on the dependent variable, that residuals have a straight line relationship with predicted scores on the dependent variable, and that the variance of the residuals about predicted scores on the dependent variable is the same for all predicted scores. When all of these assumptions are met, the residuals will be nearly rectangularly distributed with a concentration of scores at the center of the plot at each value of the predicted score.

By analyzing the overall shape of residual scatterplots for each one of the multiple regression analyses used in this project, it was evident that the residuals were close to being rectangularly distributed with the majority of scores distributed at the center of the

plot. Therefore, it appeared that the assumptions of normality, linearity, and homoscedasticity were not violated. The distributions were not skewed, which would indicate non-normality, nor curved, which would indicate non-linearity.

Several distributions did, however, seem to have a slight problem of heteroscedasticity. As stated earlier, the assumption of homoscedasticity is the assumption that the standard deviations of errors of prediction are approximately equal for all predicted dependent variable scores. In several scatterplots, the band enclosing the residuals was not approximately equal in width at all values of the predicted dependent variable. Tabachnick and Fidell (1989: 133) note that heteroscedasticity may occur when some of the variables are skewed and others are not. Unfortunately, this was the case for some of the variables in the analyses.

The three assumptions were also tested by examining two other distributions for each one of the regression analyses: normal probability plots and histograms of standardized residuals. First, in the normal probability plots, the expected normal values of the normal probability plot of residuals were plotted against their actual normal values. An expected normal value is an estimate of the *Z* score that a particular score should have, given its rank in the original distribution if the original distribution is normal. If the distribution of residuals is normally distributed, the points will fall along a straight line running from the bottom left to the upper right corners of the graph, which was undoubtedly the case for each one of the normal probability plots. In addition, if a relationship is linear and the dependent variable is normally distributed for each value of each independent variable, the distribution of the residuals should also be approximately normal. By examining the histogram of the standardized residuals for all regression analyses, it was evident that the distribution of residuals appeared to be normal.

It is now possible to conclude that even though the assumptions of normality and linearity are not violated at the univariate, bivariate, and multivariate levels, the assumption of homoscedasticity may be, to a slight degree, violated at the multivariate

level. This is not, however, overly problematic. Tabachnick and Fidell (1989: 133) note that heteroscedasticity does not invalidate the analysis as much as weaken it. In other words, sample effect parameters will be lower than the true population parameters.

While the assumptions of normality, linearity, and homoscedasticity are verified by examining plots and histograms, verification of the assumption of an absence of multicollinearity, which is discussed under the following subheading, requires the examination of a correlation matrix.

Multicollinearity

By definition, multicollinearity is a problem of variables being very highly correlated. Tabachnick and Fidell (1989: 87) note that multicollinearity weakens a statistical analysis by including variables that are redundant. When variables are correlated at about .70, multicollinearity is a slight problem, but it becomes a more serious problem, when variables are correlated at above .80. Tabachnick and Fidell (1989: 87) suggest that a correlation matrix should be examined before conducting more complex statistical analyses, and any bivariate correlation of .70 and above should be used to identify associations between variables that may be of concern.

A review of the zero-order correlation matrix containing all variables in the theoretical model[25] reveals that there are no correlations close to the .70 limit. The highest bivariate zero-order correlation is between age and year of university (.534). And, there are only two other bivariate correlations greater than .40. The affective dimension of quality of university student life and alienation are negatively correlated (-.489), and year of university and self-concept of ability are positively correlated (.449).

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[25] The correlation matrix is presented in Table 4.1: Correlation Coefficients, Means, and Standard Deviations for Variables in the Theoretical Model.

Now that it has been demonstrated that multicollinearity is not a problem, the assumption of an absence of outliers is evaluated.

Outliers

Outliers are cases with such extreme values on one variable or a combination of variables that they unduly influence statistics. According to Tabachnick and Fidell (1989: 67), when performing analyses with ungrouped data (as is the case with both regression and path analyses), both univariate and multivariate outliers should be sought among all cases at once.

Univariate outliers (cases far from the mean on plots) were discussed in Chapter III. In particular, outliers for age, year of university, and grade point average were noted. The author went on to search for multivariate outliers using both Mahalanobis distances and casewise plots. While Mahalanobis distances are used to identify outliers among the independent variables, residual casewise plots are used to identify outliers in the solution.

The search for outliers began by using the Mahalanobis distance procedure on all variables in each one of the regression analyses. Mahalanobis distance is a measure of the distance of cases from average values of the independent variables (Norusis, 1990: 262). It is a *leverage* measure that identifies outliers among the independent variables, and it is evaluated as chi square with degrees of freedom equal to the number of independent variables in the model (Tabachnick & Fidell, 1989: 96-97; 175). The criterion for multivariate outliers is Mahalanobis distance at $p < .001$. Any case with a Mahalanobis distance greater than the critical $x^2(6) = 22.458$, $x^2(8) = 26.125$, or $x^2(10) = 29.588$, was declared a multivariate outlier and considered for deletion from further analyses. In total, only one case was found to be a multivariate outlier among the independent variables, and this was the case in only three of nine models; there were no multivariate outliers among the independent variables in the other six models.

As noted earlier, the author also searched for outliers by requesting casewise plots of the standardized residuals greater than three, in absolute value, for all regression analyses. Residuals identify outliers in the solution, in contrast with common leverage measures, such as Mahalanobis distances, that identify outliers among the independent variables. The casewise plots found a total of seven outliers in the nine solutions combined. All of these cases are females who are enrolled in the elementary program.

After determining each outlying case's scores on all the variables in the model using the SPSS LIST procedure, the author decided to repeat all of the regression analyses both with and without the outliers. The results that deleted outliers produced nearly identical results to those in which the outliers were not deleted. With such a small sample size, deleting cases was not an attractive option for the purposes of this project. Therefore, the analyses that are presented in this paper do include outlying cases.

Ratio of Cases to Independent Variables

With 269 respondents in the sample and 10 independent variables in the theoretical model, the cases-to-independent variable ratio is 269: 10, or 26.9: 1. According to Tabachnick and Fidell (1989: 128), "the cases-to-independent variable ratio has to be substantial or the solution will be perfect--and meaningless." According to Halli and Rao (1992), one would like to have twenty to thirty cases for each independent variable in the model. Therefore, 27:1 is an acceptable ratio for this project.

Missing Data

The missing data were recoded to system-missing values;[26] and, the decision was made to conduct multiple regression analyses using a *pairwise missing data correlation matrix*, and replicate the analyses using only complete cases, otherwise known as *listwise*

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[26] System-missing values are never included in the computations of statistics.

missing. Before these results are presented, however, the author determined whether or not the missing values in the data set were randomly scattered by testing the missing data for patterns.

According to Tabachnick and Fidell (1989: 60-61), if little data are missing, and in a random pattern, the problems are usually not serious and almost any procedure for handling them yields similar results. The pattern of missing data is more important than the amount missing.

To test for patterns in the missing data, the author used the following procedures, as advocated by Tabachnick and Fidell. First, 10 dichotomous variables were created for each one of the independent variables in the model.[27] System-missing data was coded as "1", and all non-missing data was coded as "2". Then, for each 1 of the 10 variables, an independent sample *t* test was utilized to test the mean differences in grade point averages between the two groups. The null hypothesis was that the pattern of missing values for variables used in the regression equation was random, and the alternative hypothesis was that the pattern of missing values for the variables was not random.

For the missing data on gender, the *t* test could not be computed because gender's 4 missing cases were also missing data on GPA. The same situation was also the case for the 4 missing cases on age.

For the missing data on year of university, there were 2 cases in Group 1 and 255 in Group 2. The students who did not respond to the question on year of university (Group 1) had an average GPA of 6.00, while the average GPA for those who did answer

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[27] The names of these variables include: MISSYRU (missing data on year of university); MISSCRD (missing data on number of credit hours); MISSPRG (missing data on program); MISSGEN (missing data on gender); MISSAGE (missing data on age); MISSSES (missing data on socioeconomic status); MISSAFF (missing data on affective quality of university student life); MISSCOG (missing data on cognitive quality of university student life); MISSSCA (missing data on self-concept of ability); and MISSALI (missing data on alienation).

the question was 5.90. The author used the pooled variance *t* test ($F = 1.77, p = .370$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of 0.13 was .893. This implied that 90 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

For the missing data on number of credit hours, there were 2 cases in Group 1 and 255 in Group 2. The students who did not respond to the question on number of credit hours (Group 1) had an average GPA of 6.00, while the average GPA for those who did answer the question was 5.90. The author used the pooled variance *t* test ($F = 1.77, p = .370$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of 0.13 was .893. This implied that 90 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

For the missing data on program, there were 16 cases in Group 1 and 241 in Group 2. The students who did not respond to the question on program (Group 1) had an average GPA of 5.44, while the average GPA for those who did answer the question was 5.93. The author used the separate variance *t* test ($F = 3.23, p = .000$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of -1.09 was .292. This implied that 29 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

For the missing data on socioeconomic status, there were 11 cases in Group 1 and 246 in Group 2. The students who did not respond to at least one of the questions on father's education, father's occupation and mother's education (Group 1) had an average

GPA of 5.73, while the average GPA for those who did answer each question was 5.91. The author used the separate variance *t* test ($F = 2.65, p = .009$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of -0.35 was .733. This implied that 73 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

For the missing data on the affective quality of life scale, there were 23 cases in Group 1 and 234 in Group 2. The students who did not respond to one or more items in the affective scale (Group 1) had an average GPA of 6.00, while the average GPA for those who did respond to all of the items was 5.89. The author used the separate variance *t* test ($F = 2.18, p = .033$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of 0.65 was .517. This implied that 52 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

For the missing data on the cognitive quality of life scale, there were 15 cases in Group 1 and 242 in Group 2. The students who did not respond to one or more items in the cognitive scale (Group 1) had an average GPA of 5.67, while the average GPA for those who did respond to all of the items was 5.91. The author used the pooled variance *t* test ($F = 1.10, p = .716$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of -0.87 was .384. This implied that 38 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

For the missing data on the self-concept of ability scale, there were 25 cases in Group 1 and 232 in Group 2. The students who did not respond to one or more items in the self-concept of ability scale (Group 1) had an average GPA of 5.92, while the average GPA for those who did respond to all of the items was 5.90. The author used the separate variance *t* test ($F = 2.20, p = .003$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a t value of 0.08 was .940. This implied that 94 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

Finally for the missing data on the alienation scale, there were 35 cases in Group 1 and 222 in Group 2. The students who did not respond to one or more items in the alienation scale (Group 1) had an average GPA of 6.11, while the average GPA for those who did respond to all of the items was 5.86. The author used the separate variance *t* test ($F = 1.90, p = .027$) to determine how likely it was to see a difference of this magnitude if there was no difference in GPA between the two groups. The observed significance level associated with a *t* value of 1.63 was .109. This implied that 11 percent of the time a difference of at least this size would occur when the two means were equal; therefore, the null hypothesis that the missing data for this variable was randomly distributed could not be rejected.

Fortunately, the results of the 10 *t* tests allowed the author to conclude that the data were missing randomly. As noted earlier, the missing data was handled by employing a missing data correlation matrix, which is also known as pairwise missing, in the multiple regression analyses. The pairwise missing procedure involves all available pairs of values being used to calculate each correlation in the correlation matrix. Considering the small number of cases in the data set, pairwise missing allowed the statistical procedures to use as much data as possible; the deletion of cases with missing

values (or listwise missing) seemed unreasonable in that it would result in a substantial loss of data. According to Tabachnick and Fidell (1989: 65-66), the pairwise missing procedure often provides a reasonable multivariate solution and has the advantage of using all available data. The reader should, however, be cautioned that there are problems with this technique. In that each correlation in the correlation matrix can be based on a different number of cases, depending on missing values, some correlations are less stable than others. For example, a variable with 10 missing values has all its correlations with other variables based on 10 fewer pairs of numbers; and, if some of the other variables in the theoretical model also have missing values, but in different cases, the number of complete pairs of variables is further reduced.

At this juncture, it is possible to conclude that all of the multivariate assumptions of structural equation modeling are satisfied. First, upon examining residual scatterplots, normal probability plots, and histograms of the standardized residuals, the assumptions of normality, linearity, and homoscedasticity were verified. Then, by examining the zero-order correlation matrix for all variables in the theoretical model, the author determined that multicollinearity was not a problem; there were no correlations close to the critical .70 level. In addition, by utilizing Mahalanobis distances and residual casewise plots, the author determined that outliers were not a significant problem in the data set; and, the 27:1 cases-to-independent variable ratio was acceptable. Finally, on the subject of missing data, the author used *t* tests to determine whether or not missing values in the data set were randomly scattered. Once it was established that there was no pattern to the missing data, the decision was made to conduct all analyses using a pairwise missing data correlation matrix.

Now that it has been demonstrated that all of the multivariate assumptions have been verified, the results of the multiple regression and path analyses can be discussed in detail.

Testing the Theoretical Model

In this section, the theoretical model is empirically tested by using the structural equation modeling procedures of multiple regression and path analysis. In the first subsection, the zero-order correlation matrix for all 11 variables in the theoretical model is discussed. Then, in the second subsection, the results from three main multivariate analyses are presented in detail. First, the effects of social background and university background on both the affective and cognitive domains of quality of life of university students are examined. Secondly, the effects of social background, university background, and quality of life of university students on the self-concept of ability and alienation of students are examined; and, finally, the effects of social background, university background, quality of life of university students, self-concept of ability, and alienation of university students on the academic attainment of students are examined. In the third and final subsection, the theoretically expected interaction effect between the cognitive and the affective domains of the quality of student life is examined.

Zero-Order Correlations

Table 4.1 presents the zero-order correlations, means, and standard deviations for the eleven variables in the model.[28] By definition, a zero-order correlation is a correlation between variables that does not involve any control variables. At this preliminary stage of the analysis, what is of interest are the quality of student life variables, and their associations with three dependent variables: self-concept of ability, alienation, and most importantly, cumulative grade point average.

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[28] Readers should refer back to Chapter III for a review of the variable abbreviations, which will be used in this and subsequent tables in this chapter.

Table 4.1:

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

VARIABLES	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. YROFU											
2. CRDHRS	-.046										
3. PROGRAM	.283**	-.060									
4. FEMALE	-.140*	.016	-.271**								
5. AGE	.534**	-.177**	.093	-.052							
6. SES	.076	.009	.020	-.041	-.135*						
7. AFF	.030	.049	-.053	.057	-.010	-.011					
8. COG	-.039	-.054	-.105	.001	.052	-.051	.311**				
9. SCABIL	.449**	.135*	.193**	-.010	.227**	.056	.058	.033			
10. ALIEN	-.048	.105	.020	-.112*	-.077	-.050	-.489**	-.121*	.006		
11. GPA	.209**	.076	.015	.047	.134*	.003	.145*	-.217**	.249**	.003	
MEANS	2.60	20.92	0.52	0.75	22.74	17.91	2.89	2.74	30.10	45.67	5.90
S.D.	1.90	7.63	0.50	0.44	4.54	6.84	0.31	0.36	4.72	5.74	1.06

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

First, both students' perceptions of the affective quality of their university lives and self-concept of ability are positively associated with cumulative grade point average (.145 and .249 respectively). These statistically significant positive correlations suggest that students who have positive feelings about overall school experience along with high quality interactions with their professors and peers are more likely to attain high grades in their courses than students who have negative feelings about school and low social support; similarly, students who have high self-concepts of their academic abilities are more likely to attain high grades than students who have low self-concepts of their abilities. Conversely, students' perceptions of the cognitive quality of their university lives is negatively associated with cumulative grade point average (-.217). This statistically significant negative correlation suggests that students who perceive their

courses to be highly cognitively demanding are less likely to attain high grades than students who perceive their courses to be less demanding.

It is also important to note the associations between the cognitive and affective domains of quality of life of university students and alienation. Both the cognitive domain and the affective domain are negatively associated with alienation (-.121 and -.489 respectively). These statistically significant negative correlations suggest that students who have positive feelings about overall school experience along with high quality interactions with their professors and peers are less likely to feel alienated in their classes; similarly, students who perceive their courses to be highly cognitively demanding are less likely to feel alienated in their classes.

Before discussing results of the multivariate analyses, there are some additional points about this matrix that deserve notation. Even though both the cognitive and affective domains of quality of life of university students are significantly associated with both grade point average and alienation, neither domain is significantly associated with self-concept of ability at the zero-order level. Specifically, the correlation between cognitive quality of life and self-concept of ability is only .033, and the correlation between affective quality of life and self-concept of ability is only .058. It is also interesting that, at the zero-order level, there are no significant associations between the six background variables and the quality of life variables. Program is the background variable with the largest correlation with the cognitive domain (-.105). This implies that students enrolled in the elementary program in the faculty of education perceive that their courses are more cognitively demanding than students enrolled in the secondary program. Gender is the background variable with the largest correlation with the affective domain (.057). This implies that female students have more positive feelings about their interactions with professors and peers than male students. Finally, it is worth noting that the cognitive and affective domains of quality of life of university students are moderately correlated with each other at the zero-order level (.311). This suggests, at the bivariate

level, that students who have positive feelings about their school experiences along with high quality interactions with their professors and classmates are also likely to perceive their courses to demand both lower order (structural) and higher order (functional) cognitive processes.

Now that the zero-order correlation matrix for all 11 variables in the theoretical model has been discussed, the results from the multivariate multiple regression and path analyses are presented in detail.

The Multivariate Analyses

In this section, the theoretical model is empirically tested by using multivariate procedures. In accordance with the structural equation modeling procedures described in Chapter III, the theoretical model will be tested through three analyses. In the first analysis, the effects of social background and university background on both the affective and cognitive domains of quality of life of university students are examined. In the second analysis, the effects of social background, university background, and quality of life of university students on the self-concept of ability and alienation of students are examined. In the final analysis, the effects of social background, university background, quality of life of university students, self-concept of ability, and alienation of university students on the academic attainment of students are examined. As originally noted in Chapter I, it is hypothesized that the social background and university background characteristics of students are mediated by their perceptions of quality of life within universities. Furthermore, it is hypothesized that these perceptions, in turn, affect students' academic self-concepts and alienation, which ultimately affect their academic attainment.

The Effects of University Background and Social Background on the Cognitive and Affective Domains of Quality of Life of University Students

An examination of the effects of social background and university background variables on the quality of life of university students is comprised of two stages. The first model relates the university background variables, year of university, number of credit hours, and program, as well as the social background variables, gender, age, and, socioeconomic status, on affective quality of life of university students; then, the second model relates the university and social background variables to cognitive quality of life of university students.

There are two basic presumptions underlying these models. First, it is expected that factors related to the university background of students will have an impact on their perceptions of quality of life in the affective and cognitive domains. Students with more years of university experience probably find it easier to become socially and academically integrated than students with fewer years of university experience, because they have had more time to adjust to the university environment (Huntington, 1957). Secondly, it is expected that factors related to the social background of students may also have notable effects on their perceptions of quality of life. For example, research has found that females are more likely than males to profit from positive interactions with their professors and peers (see Chapman & Pascarella, 1983; Gilligan, 1982), and it has been observed that students from different socioeconomic backgrounds interact differently with their professors and peers (see Chapman & Pascarella, 1983; Tinto, 1975).

Table 4.2 presents the standardized regression coefficients and R^2s for the effect of university background and social background on cognitive and affective quality of life of university students. As the Adjusted R^2s at the bottom of the table indicate, the group of six background variables account for practically no variance of the variance in affective quality of life (-0.016) and no variance of the total variance in cognitive quality of life (-0.004). Adjusted R^2s are negative when the amount of information that the

independent variables in the model are explaining does not justify taking the requisite degrees of freedom away from the error term (L. M. Armstrong, personal communication, June 14, 1996). Therefore, the size of these R^2s suggests that quality of university student life is affected by variables other than the six university and social background measures included in the theoretical model. In other words, year of university, number of credit hours, program, gender, age, and socioeconomic status do not have a significant impact on students' perceptions of quality of life in either the cognitive or affective domain.

Table 4.2:

Standardized Regression Coefficients and R^2s for the Effects of University Background, and Social Background Variables on the Affective and Cognitive Domains of Quality of Life of University Students

Independent Variables	*Dependent Variables*	
	Affective Quality of Life	Cognitive Quality of Life
Year of University	.076	-.052
	(.084)	(.082)
Number of Credit Hours	.042	-.049
	(.068)	(.067)
Program	-.055	-.109
	(.072)	(.071)
Gender	.049	-.033
	(.070)	(.068)
Age	-.038	.075
	(.083)	(.081)
Socioeconomic Status	-.019	-.036
	(.069)	(.067)
Adjusted R^2	-.016	-.004

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

Note: standard errors of the standardized regression coefficients are presented in parentheses.

In addition to the total variance explained, Table 4.2 also presents the effect parameters, standardized regression coefficients, for the university and social background variables on quality of life of university students. When examining the effects in this as well as subsequent tables in ensuing sections, readers should note that effects of 0.250 are considered to be strong, effects between 0.100 and 0.250 are considered to be moderate, and effects that are less than 0.100 are considered to be weak.

This table illustrates that none of the independent variables have a statistically significant effect on quality of life; in fact, all of the effects are weak. Three coefficients do, however, approach significance. First, year of university has a small positive effect on affective quality of life (.076). This suggests that students with a greater number of years of university experience find their classes more socially supportive--a finding that supports Huntington's (1957) findings. In addition, being enrolled in the secondary program has a small negative effect on cognitive quality of life (-.109), which suggests that students who are training to become teachers in secondary schools find their programs less cognitively demanding than students who are training to become teachers in elementary schools. Age also has a small positive effect on cognitive quality of life (.075), which suggests that older students find their classes to be more academically challenging than younger students.

Now that an examination of the effects of university background and social background variables on the quality of life of university students is complete, the discussion will turn to examining the effects of university background, social background, and quality of life of university students on the individual social psychological dispositions of students.

The Effects of University Background, Social Background, and the Quality of Life on the Individual Social Psychological Dispositions of University Students

An examination of the effects of social background, university background, and quality of life on the self-concept of ability and alienation of university students is comprised of four component analyses. The first model relates the university background variables (year of university, number of credit hours, and program) and the social background variables (gender, age, and, socioeconomic status) on the self-concept of ability of university students; then, the second model relates the university background, social background, and quality of life variables on self-concept of ability. Similarly, the third model relates the university background, and social background variables on the alienation of university students; and finally, the fourth model relates the university background, social background, and quality of life variables on alienation.

The basic assumption underlying this first step of the analyses is that social and university background factors have an effect on students' perceptions of their academic abilities. For example, students with a greater number of years of university experience may have higher academic self-concepts than students with fewer years of university experience (see Astin, 1982; Chickering, 1974; Pascarella, 1985). In addition, students who are enrolled in a greater number of credit hours may have higher academic self-concepts than students who are enrolled in fewer credit hours of university coursework. Self-concepts may also vary by program, gender, age, and socioeconomic status. For gender, Astin (1977) has found that, during the undergraduate years, the academic self-concepts of males increase more dramatically than the academic self-concepts of females, while for socioeconomic status, Anderson (1988) has found that socioeconomic status has a positive impact on all aspects of an undergraduate student's experience, including self-concept of ability.

The extreme left-hand column of Table 4.3 reports the standardized regression coefficients and R^2s for the effects of university background and social background on

students' perceptions of their academic abilities. As the Adjusted R^2 at the bottom of that column indicates, the group of six background measures account for a significant 22 percent (.216) of the total variance in self-concept of ability.

Table 4.3:

Standardized Regression Coefficients and R^2s for the Effects of University Background, Social Background, and Quality of Life Variables on the Self-Concept of Ability and Alienation of University Students

	Dependent Variables			
Independent	Self-Concept of Ability		Alienation	
Variables	Step 1	Step 2	Step 1	Step 2
Year of University	.420***	.422***	-.025	.016
	(.075)	(.075)	(.085)	(.075)
Number of Credit Hours	.164**	.167**	.096	.119*
	(.061)	(.061)	(.069)	(.060)
Program	.101	.109	.007	-.016
	(.064)	(.065)	(.073)	(.063)
Gender	.077	.078	-.120	-.094
	(.062)	(.062)	(.071)	(.062)
Age	.030	.026	-.062	-.085
	(.074)	(.074)	(.084)	(.073)
Socioeconomic Status	.028	.030	-.062	-.071
	(.061)	(.061)	(.070)	(.061)
Affective Quality of Life		.019		-.506***
		(.063)		(.063)
Cognitive Quality of Life		.064		.043
		(.064)		(.063)
Adjusted R^2	.216***	.214***	.005	.246***

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

Note: standard errors of the standardized regression coefficients are presented in parentheses.

One of the most striking findings in this table is that year of university has a strong positive effect on academic self-concept (.420). This provides support for Astin (1982), Chickering (1974), and Pascarella's (1985) findings that students with more

university experience have higher academic self-concepts than students with less university experience. Another notable finding is that number of credit hours has a moderate effect on students' perceptions of their academic abilities (.164). This suggests that students who have heavier course loads have higher academic self-concepts than students who are enrolled in fewer courses. Two other interesting findings from this analysis concern the effects of both program and gender on academic self-concept. The moderate positive effect of program on self-concept of ability (.101) indicates that students enrolled in the secondary program have more positive perceptions of their academic abilities than those students enrolled in the elementary program. This contrasts with findings presented under the previous heading, which indicated that students in the secondary program found their programs less cognitively demanding than students in the elementary program. In addition, the slight positive effect of gender on self-concept of ability (.077) reveals that females have slightly more positive conceptions of their academic ability than males. This contradicts Astin's (1977) above noted finding that the academic self-concepts of male undergraduate students are higher than the academic self-concepts of females.

The second step of these analyses includes an expanded model that is based on the assumption that students' academic self-concepts may be affected not only by a variety of background factors, but also by factors related to the affective and cognitive quality of their university lives. More specifically, it is expected that students who have positive interactions with their professors and peers as well as perceive their courses to be academically challenging may be more likely to have high academic self-concepts than students who do not have positive interactions with the significant others in their university environment and do not feel intellectually stimulated in their classes. This expectation is supported by the research of Clifton and Roberts (1993), and Kleinfeld (1975), who suggest that students enrolled in warm and demanding classes may have higher academic self-concepts than students who are not enrolled in such classes.

The second column of Table 4.3 reports the standardized regression coefficients and R^2s for the effects of background and quality of student life measures on students' perceptions of their academic abilities. As the Adjusted R^2 at the bottom of the column indicates, the group of eight variables account for a significant 21 percent (.214) of the total variance in self-concept of ability. The slight difference between the R^2 of this expanded model with eight independent variables and the R^2 of the first model with six independent variables is likely due to rounding error.

It is interesting to note that the significant effects of year of university, number of credit hours, program, and gender are very similar to the coefficients reported in the first step of these analyses. The effect of year of university on academic self-concept increases only slightly from .420 to .422 when the quality of university student life variables are added. Similarly, the effect of number of credit hours increases slightly from .164 to .167, the effect of program increases slightly from .101 to .109, and the effect of gender remains the same at .077 to .078. Curiously, the affective and cognitive quality of student life do not have an effect on students' academic self-concepts. This does not provide support for Clifton and Roberts (1993) and Kleinfeld's (1975) suggestion that students with more positive perceptions of the warmth and demandingness of their classes may have higher academic self-concepts.

The analysis now turns to examine whether social and university background factors have an effect on student alienation. The basic assumption underlying this first step of the analyses is that social and university background factors have an effect on students' perceptions of alienation. For example, students with a greater number of years of university experience may have lower alienation than students with a fewer number of years of university experience. In addition, students who are enrolled in a greater number of credit hours may have lower alienation than students who are enrolled in fewer credit hours of university coursework. Like self-concept of ability, alienation may also vary by

program, gender, age, and socioeconomic status. Olsen (1969), for example, found significant inverse correlations between socioeconomic status and alienation.

The third column of Table 4.3 reports the standardized regression coefficients and R^2s for the effects of university background and social background on student alienation. As the Adjusted R^2 at the bottom of that column indicates, the group of six background variables account for less than 1 percent (.005) of the total variance in alienation. The small size of this R^2 suggests that students' alienation is affected by far more than the social and university background variables included in this model. Within this context, however, one of the more interesting findings from this analysis is that the number of credit hours has a slight positive effect on alienation (.096). This suggests that students who are enrolled in a greater number of credit hours are slightly more likely to feel alienated. The increased stress level associated with a heavier course load may provide an explanation for this finding. In addition, gender has a slight negative impact on alienation (-.120), which suggests that females are less likely to feel alienated in their university environments than are males.

The second step of these analyses includes an expanded model that is based on the assumption that the alienation of students is affected by social and university background factors as well as quality of university life variables. More specifically, it is expected that students who have positive interactions with their professors and peers as well as perceive their courses to be academically challenging may be less likely to feel alienated than students who do not have positive interactions with the significant others in their university environment and do not feel intellectually stimulated in their classes. Clark (1959) has found that the more dissatisfied members of a particular organization are with the organization's operations, the more likely they are to feel alienated. In addition, Robinson (1973) has found that students who describe themselves as dissatisfied with school are more likely to rate themselves as alienated.

The extreme right-hand column of Table 4.3 reports the standardized regression coefficients and R^2s for the effects of background and quality of student life variables on students' perceptions of alienation. As the Adjusted R^2 at the bottom of the final column indicates, the group of six background and two quality of life measures account for a significant 25 percent (.246) of the total variance in alienation. This R^2 is substantially higher than that of the previous stage of this analysis; therefore, by adding cognitive and affective quality of life variables, considerably more of the variance in alienation is explained.

Within this context, the most notable effect in this analysis is the strong negative effect that affective quality of life has on student alienation (-.506). This suggests that students who experience positive interactions with their professors and peers find their university environment to be much less alienating. With the affective and cognitive quality of life variables included in the model, number of credit hours has an even stronger positive effect on alienation (.119), but gender's effect on alienation drops from -.120 to -.094. The fact that the effect of number of credit hours has increased suggests that one or both of the quality of university student life variables is suppressing (partially concealing or reducing) the relationship between number of credit hours and alienation. In contrast, the fact that the effect of gender has dropped, however, suggests that one or both of the quality of university student life variables is now explaining some of the relationship between gender and alienation. Two other interesting findings from this analysis concern the effects of both age and socioeconomic status on alienation. First, the slight negative effect of age on alienation (-.085) indicates that older students feel less alienation from university than younger students. Moreover, the slight negative effect of socioeconomic status on alienation (-.071) reveals that students from higher social class backgrounds are less alienated in their academic environments than students from lower social class backgrounds.

Up to this point, all of the effects that have been presented have been direct effects, even though some discussion has implicitly mentioned indirect effects. By definition, *direct effects* are the effects between variables that endure when intervening variables are held constant. While calculating direct effects provide researchers with a reasonable idea of how variables are interrelated, there is always the possibility that other intervening variables may be transmitting part or even all of the effects being examined. This is why researchers often employ the techniques of path analysis to calculate both direct and indirect effects when examining causal relationships between variables. By definition, *indirect effects* are those parts of a variable's total effect that are mediated by intervening variables between the cause and effect of interest. Alwin and Hauser (1975) have provided techniques to calculate all direct and indirect effects in this fully recursive theoretical model.

Table 4.4 presents the total, indirect, and direct effects of the predetermined variables (university background, social background, and quality of life variables) on the self-concept of ability and alienation of university students. For the sake of parsimony, a general rule of thumb of .50 or greater is used to guide the ensuing discussion; in other words, only relatively strong indirect effects of .50 and above will be discussed in detail.

This table clearly illustrates that very little of the effects of the university and social background variables on self-concept of ability are mediated by the quality of student life variables. In fact, the largest indirect effect is only -.008 for the mediated effect of program on academic self-concept.

Table 4.4:

Total, Indirect, and Direct Effects of the Predetermined Variables on the Self-Concept of Ability and Alienation of University Students

Dependent Variables	*Predetermined Variables*	*Total Effects*	*Indirect Effects via* Quality of Student Life	*Direct Effects*
SCABIL	YROFU	.420***	-.002	.422***
	CRDHRS	.164**	-.003	.167**
	PROGRAM	.101	-.008	.109
	GENDER	.077	-.001	.078
	AGE	.030	.004	.026
	SES	.028	-.002	.030
	AFF	.019	--	.019
	COG	.064	--	.064
ALIEN	YROFU	-.025	-.041	.016
	CRDHRS	.096	-.023	.119*
	PROGRAM	.007	.023	-.016
	GENDER	-.120	-.026	-.094
	AGE	-.062	.023	-.085
	SES	-.062	.009	-.071
	AFF	-.506***	--	-.506***
	COG	.043	--	.043

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

Similarly, the effects of the background variables on alienation are only slightly mediated by the quality of student life variables. For example, the social background variable with the largest indirect effect is only -.026 for the mediated effect of gender on alienation. By using a formula that divides the indirect effect by the sum of indirect and direct effects, 22 percent of the effect of gender on alienation is found to be mediated by quality of student life--particularly quality of life in the affective domain. In other words, female students generally have a higher quality of life, and these students who have a higher quality of life are less likely to feel alienated. Similarly, the university background

variable with the largest indirect effect is only -.041 for the effect of year of university on alienation. At first glance, however, the indirect effect of -.041 is somewhat puzzling in comparison to the total effect for year of university, which is only -.025, and the direct effect, which is .016. In cases where the direct and indirect effects have different signs, Alwin and Hauser (1975: 43) suggest that "a possible solution is to express the variable's components as proportions of the sum of absolute values". In other words, the negative signs for the indirect effect (-.041) and total effect (-.025) and the positive sign for the direct effect (.016) can be ignored and the formula described above can be used for calculating the percentage of the mediating effect. When this is done, approximately 72 percent of the effect of year of university on alienation is found to be suppressed by quality of life variables. Because the direct effect of year of university on alienation is so small, however, the suppressor effect of the quality of life variables does not warrant a detailed explanation.

Now that an examination of the effects of social background, university background, and quality life variables on the social psychological dispositions of university students is complete, the discussion will turn to examining the effects of university background, social background, quality of life, self-concept of ability, and alienation on the academic attainment of students.

The Effects of University Background, Social Background, Quality of Life, and Individual Social Psychological Dispositions on the Academic Attainment of University Students

In this section, the effects of social background, university background, quality of life of university students, and individual social psychological variables on the academic attainment of students are examined. The analyses are presented in three stages. In the first stage, the effects of university and social background variables are estimated on grade point average. In the second stage, the effects of university background, social background, and the cognitive and affective domains of quality of life variables, are

estimated on grade point average. And, in the third stage, the effects of university background, social background, quality of life, and the social psychological variables, are estimated on grade point average.

The basic assumption underlying the first stage of this analysis is that university and social background variables will have an effect on the academic attainment of students. For university background variables, it is expected that students with more years of university experience will have higher grade point averages than students with fewer years of university experience (Pascarella & Terenzini, 1991: 369-370). Given the previous finding that students with more years of university experience have higher academic self-concepts, and given the well-documented, positive relationship between self-concept of ability and academic attainment (see Brookover et al., 1979), it is likely that students with more years of university may earn higher grade point averages than students with less university experience. Moreover, given both of these findings, it is also possible that self-concept of ability will play a significant intervening role between year of university and grade point average. Similarly, given the previous finding that students enrolled in a greater number of courses have higher academic self-concepts and given the positive relationship between self-concept of ability and academic attainment, it is possible that students with heavier course loads may earn higher grades than students with lighter course loads. Or, self-concept of ability may play an important mediating role between number of credit hours and grade point average. Finally, students enrolled in one faculty of education may program, may academically outperform students in another program.

The hypothesized influence of social background variables on academic attainment is consistent with the status attainment tradition--particularly Blau and Duncan's (1967) classic work, which showed that a child's educational attainment is influenced by his or her family's social status. Also, females often outperform males

considering Astin's (1993) finding that females generally earn higher grade point averages than males at the university level.

Step 1 of Table 4.5 reports the R^2s and standardized regression coefficients for the effects of university background and social background variables on academic attainment. Only about 4 percent (.035) of the variance in grade point average is explained by the six university and social background variables included in the model. At this step, it is worth noting that both year of university and number of credit hours are significantly related to academic attainment. More specifically, the positive effects of year of university and number of credit hours on grade point average (.205 and .091 respectively) suggest that students with more years of university experience and students with heavier course loads are more likely to have higher grade point averages than students with fewer years of university experience and students with lighter course loads. This provides support for Huntington (1957) and Merton's (1957) findings that the longer students are enrolled in educational institutions, the better acquainted they are with a university's academic expectations, and the greater their chances for academic success.

Program, however, is not significantly related to grade point average even though there were programmatic differences in the previous analysis. Readers will recall from the previous analysis that students enrolled in the secondary program have more positive perceptions of their academic abilities; this does not, however, translate into higher academic achievement. Moving on to discuss social background variables, it is important to note that not one of the three variables has a significant effect on grade point average. This suggests that there is no institutional grading discrimination on the basis of age, gender, or socioeconomic status. The only coefficient that comes close to significance is gender. The finding that being a female has a slight positive effect on grade point average (.070) provides tentative support for Astin's (1993) finding that females are more likely than males to have higher grade point averages.

Table 4.5:

Standardized Regression Coefficients and R^2s for the Effects of University Background, Social Background, Quality of Life, and Individual Social Psychological Variables on the Academic Attainment of University Students

Independent Variables	*Dependent Variable* Grade Point Average		
	Step 1	Step 2	Step 3
Year of University	.205**	.173*	.090
	(.080)	(.079)	(.086)
Number of Credit Hours	.091	.068	.022
	(.065)	(.064)	(.067)
Program	-.022	-.041	-.061
	(.069)	(.068)	(.069)
Gender	.070	.050	.046
	(.066)	(.065)	(.067)
Age	.046	.076	.081
	(.079)	(.077)	(.079)
Socioeconomic Status	-.004	-.009	-.007
	(.065)	(.064)	(.065)
Affective Quality of Life		.221***	.275***
		(.066)	(.077)
Cognitive Quality of Life		-.284***	-.302***
		(.067)	(.068)
Self-Concept of Ability			.193**
			(.073)
Alienation			.114
			(.075)
Adjusted R^2	.035*	.116***	.146***

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

Note: standard errors of the standardized regression coefficients are presented in parentheses.

Step 2 of the model is based on the assumption that the academic attainment of students is affected not only by social background variables, but also students' perceptions of the quality of the affective and cognitive aspects of their university lives. Readers will recall from the discussion in Chapter I and II that this model is the first to answer the most important question examined in this project--can the quality of student life measures

be established as valid and reliable performance indicators of the functioning of universities through their influence on students' grade point averages? As described in detail in the literature review in Chapter II, it is expected that the interactions that students have with their professors and classmates will have a positive influence on their academic attainment. In addition, it is expected that students who experience moderately high cognitive demands buttressed by the emotional support needed to meet these demands, will also earn higher grades than students who do not have these kinds of experiences (see Clifton & Roberts, 1993; Kleinfeld, 1975).

The second step of Table 4.5 reports the R^2s and standardized regression coefficients for the effects of university background, social background, and quality of student life variables on academic attainment. As the table illustrates, almost 12 percent (.116) of the variance in academic attainment is explained by these two clusters of variables. It is significant that the amount of variance explained has tripled from the first stage of this analysis. This implies that the quality of student life variables have a significant effect on grade point average--an effect that greatly exceeds that which is attributable to the university and social background variables alone.

The most striking finding at this stage of the analysis is the effect of the quality of student life variables on grade point average. Both cognitive and affective quality of student life are significantly related to grade point average. More specifically, the strong positive effect of affective quality of student life (.221) suggests that students who have positive interactions with their professors and peers, as well as have positive overall experiences at university are more likely to earn higher grades than students who do not have these kinds of interactions. In addition, the strong negative effect of cognitive quality of student life (-.284) indicates that students who perceive their courses to be highly demanding on their cognitive abilities are less likely to earn higher grades than students who do not have these kinds of perceptions.

It is also interesting to note that the effects of three significant background variables--year of university, number of credit hours, and gender--decrease at this stage of the analysis. The largest decrease in these three effects is the effect of year of university. More specifically, the effect of year of university decreases from .205 in the first stage to .173; this suggests that a significant proportion of the effect of year of university is actually explained by the affective and cognitive domains of quality of life of university students. Another background variable that decreases at this stage of the analysis is number of credit hours. In this regard, the effect of number of credit hours decreases from .091 to .068. Although this drop is not as large as that of year of university, it indicates that students with heavier course loads are more likely to have higher grade point averages than students with lighter course loads, although some of this effect is due, in part, to student perception of cognitive and affective quality of life. Finally, the effect of gender also decreases at this stage of the analysis--from .070 to .050; as with number of credit hours, this drop indicates that female students are more likely to have higher grade point averages than males, even though some of this effect is due, in part, to student perception of quality of life. In other words, females perceive a better quality of life, and as such, do better academically. In contrast with the effects of year of university, number of credit hours and gender, however, the effect of age increases at this stage of the analysis--from .046 to .076. This increase suggests that older students are more likely to have higher grade point averages than younger students, even though the effect of this variable is slightly suppressed by cognitive and affective quality of life variables. Discussion will return to these differences, as mediating or suppressing effects of the quality of life variables, once the review of the final step of the analysis is complete.

The final step of Table 4.5 reports the R^2s and standardized regression coefficients for the effects of university background, social background, quality of student life, and individual social psychological variables on academic attainment. This is the fully recursive model--a model that is based on the assumption that, besides the background

and quality of university student life factors already examined, the social psychological dispositions of students may also be important predictors of academic attainment (see Astin, 1993: 188). As the table illustrates, almost 15 percent (.146) of the variance in academic attainment is explained by these 10 variables. This represents an increase of approximately 3 percent in explained variance from the previous step of the analyses. This finding implies that self-concept of ability and alienation make a distinct contribution to the explanation of variance in grade point average, beyond that which is attributable to the quality of life, university, and social background variables.

Within this context, it is interesting to note that the effects of the quality of student life variables are stronger at this final stage of the analysis. More specifically, the effect of affective quality of life on grade point average increases slightly from .221 to .275, suggesting that the effect of this variable is slightly suppressed by self-concept of ability and alienation. And, the effect of cognitive quality of life on grade point average increases from -.284 to -.302, which suggests that the effect of this variable is also slightly suppressed by self-concept of ability and alienation. In both cases, self-concept of ability and alienation are acting as suppressor variables. By definition, a suppressor variable reduces, weakens, or partially conceals a true relationship between two variables (Rosenberg, 1968: 85). Therefore, self-concept of ability and alienation are acting to reduce the true relationship between affective quality of life and grade point average, and between cognitive quality of life and grade point average. When self-concept of ability and alienation are controlled in the final step of the analysis, both affective and cognitive quality of life have a larger influence on grade point average.

Another important finding is the strong positive effect of self-concept of ability on grade point average (.193). This effect, which is independent of all other variables, indicates that students with high academic self-concepts earn higher grades than students with low academic self-concepts, and it confirms the findings of Astin (1993) and Brookover et al. (1979) who have consistently suggested that a strong positive

relationship exists between these two variables. An unanticipated finding at this level of analysis is, however, the moderate positive effect of alienation on grade point average (.114). This suggests that students who feel more alienated in their classes earn higher grades than students who feel less alienated. Alienation may be similar to frustration, and result in students working harder to attain high grades.

It is also interesting to note the effects of the background variables. First, the effects of year of university, number of credit hours, and gender continue to decrease at this stage of the analysis. The largest decrease in these three effects is the effect of year of university. More specifically, the effect of year of university decreases from .205 in the first step, to .173 in the second step, and .090 in the third step. This drop indicates that students with more university experience are more likely to have higher grade point averages than students with less university experience, although a greater proportion of the effect of year of university is explained by self-concept of ability and alienation, and a lesser proportion is explained by quality of student life. Similarly, the effect of number of credit hours decreases from .091 in the first step, to .068 in the second step, and .022 in the third step. This drop suggests that students with heavier course loads are more likely to have higher grade point averages than students with lighter course loads, although a greater proportion of the effect of number of credit hours is explained by self-concept of ability and alienation, and a lesser proportion is explained by quality of student life. The effect of gender also decreases at this stage of the analysis--from .070 in the first step, to .050 in the second step, and .046 in the third step; this drop indicates that female students are more likely to have higher grade point averages than males, even though some of this effect is due, in part, to student perception of quality of life, self-concept of ability, and alienation. Before closing the discussion of background variables, it is important to note that the effect of age increases slightly at this stage of the analysis--from .046 in the first step, to .076 in the second step, and .081 in the third step. This increase suggests that older students are more likely to have higher grade point averages than younger students,

even though the effect of this variable is slightly suppressed by quality of life, self-concept of ability and alienation.

Despite the foregoing paragraph's brief discussion of indirect effects, the forthcoming discussion will examine the indirect effects in greater detail. Readers will recall that an indirect effect is defined as the part of a variable's total effect that is mediated by intervening variables between the cause and effect of interest. Table 4.6 presents the total, indirect, and direct effects of the predetermined variables on the academic attainment of university students. This table clearly illustrates that the effects of several of the university and social background variables are mediated by quality of life and individual social psychological variables, and the effects of the quality of life variables are suppressed by self-concept of ability and alienation.

At the outset, it is important to note that all of the indirect effects are very small in size--none come close to meeting the .50 standard discussed earlier. First, the effects of three background variables on grade point average are slightly mediated by the quality of student life variables. The first of these variables is year of university (.032). By employing the formula that divides the indirect effect by the sum of the direct and indirect effects, 16 percent of year of university is found to be mediated by students' cognitive and affective quality of university student life. In other words, students with a greater number of years of university experience generally have a higher quality of life, and students who have a higher quality of life are more likely to earn higher grade point averages. Number of credit hours is also slightly mediated by quality of student life variables (.023). Twenty-five percent of the effect of number of credit hours is mediated by students' cognitive and affective quality of life. This means that students with heavier course loads generally have a better quality of life, and students who have a better quality of life are more likely to earn higher grade point averages. Finally, gender is slightly mediated by quality of student life variables (.020). Twenty-nine percent of the effect of gender is mediated by students' cognitive and affective quality of life. This means that female

students generally have a superior quality of life, and students who have a superior quality of life are more likely to earn higher grade point averages.

Table 4.6:

Total, Indirect, and Direct Effects of the Predetermined Variables on the Academic Attainment of University Students

Dependent Variable	*Predetermined Variables*	*Total Effects*	*Indirect Effects via*		*Direct Effects*
			Quality of Student Life	Individual Soc. Psych.	
GPA	YROFU	.205**	.032	.083	.090
	CRDHRS	.091	.023	.046	.022
	PROGRAM	-.022	.019	.020	-.061
	GENDER	.070	.020	.004	.046
	AGE	.046	-.030	-.005	.081
	SES	-.004	.005	-.002	-.007
	AFF	.221***	--	-.054	.275***
	COG	-.284***	--	.018	-.302***
	SCABIL	.193**	--	--	.193**
	ALIEN	.114	--	--	.114

* p < .05; ** p < .01; *** p < .001.

Second, the effects of two of the background variables on grade point average are slightly mediated by the individual social psychological variables. The first of these variables is year of university. Even though 16 percent (.032) of year of university was found to be mediated by quality of university student life, 40 percent (.083) of year of university is mediated by self-concept of ability and alienation. This comparison reveals that a greater proportion of the effect of year of university on grade point average is explained by self-concept of ability and alienation, and a lesser proportion of the effect is explained by quality of student life. The second of these variables is number of credit hours. While 25 percent (.023) of number of credit hours was found to be mediated by

quality of university student life, 51 percent (.046) of number of credit hours is mediated by self-concept of ability and alienation. This comparison reveals that a greater proportion of the effect of number of credit hours on grade point average is explained by self-concept of ability and alienation, and a lesser proportion of the effect is explained by quality of student life. In sum, the mediating effects, by way of both quality of student life and individual social psychological dispositions, suggest that it is not just the number of years of university experience or the number of courses that affects grade point averages; more importantly, it is the quality of student life, and the social psychological dispositions that students with more years of university experience and heavier course loads bring to the university experience.

Finally, Table 4.6 illustrates that the effect of the affective quality of university student life on grade point average is slightly suppressed by the individual social psychological variables. The indirect effect of -.054 is somewhat puzzling in comparison to the total effect for affective quality of life, which is .221, and the direct effect, which is .275. By applying Alwin and Hauser's (1975: 43) absolute value strategy to deal with the problem of direct and indirect effects with different signs, approximately 16 percent of the effect of affective quality of student life is found to be suppressed by students' social psychological dispositions. As noted earlier, this finding implies that self-concept of ability and alienation are partially concealing (or reducing) the true relationship between affective quality of life and grade point average.

Even though the majority of indirect effects are small in this theoretical model, it should now be clear that by calculating indirect effects, researchers are provided with a much clearer understanding of how variables are related to each other. When a researcher fails to examine indirect effects, he or she may limit interpretations of the data.

Now that the presentation of results from the three main multivariate analyses is complete, the discussion will turn the theoretically proposed interaction effect between the cognitive and affective domains of the quality of life of university students.

The Interaction of the Cognitive and Affective Domains of Quality of Life on Grade Point Average, Self-Concept of Ability, and Alienation

An interaction between the cognitive and affective domains of the quality of life of university students is suggested by Roberts and Clifton in their theory of effective learning and quality of university student life, which was described in detail in Chapter I. In short, Roberts and Clifton suggest that the specific combination of moderate levels of cognitive and affective quality of life is the most conducive to facilitating long-term effective learning. In such a context, professors make rational and meaningful demands of their students without sacrificing their ability to understand and support each student's personal integrity and dignity. In contrast, a combination of low cognitive quality of life (low demandingness) and high affective quality of life (high warmth) should not be conducive to learning. Likewise, a combination of high cognitive quality of life (high demandingness) and low affective quality of life (low warmth) should not be conducive to learning.

There are three, progressively more complex, ways of testing the hypothesis that an interaction effect between the cognitive and affective domains of quality of life explains, in part, grade point average. The first is an visual inspection of bivariate scatterplots, the second is the application of a series of two-way analyses of variance, and the third is the use of an interaction variable in the main multivariate structural equation modeling procedures.

To begin, six bivariate scatterplots were visually inspected to determine whether the combination of moderate levels of cognitive and affective quality of life is the most conducive to facilitating long-term effective learning. The predicted bivariate relationships between: (a) cognitive quality of life and grade point average; and (b) affective quality of life and grade point average, are curvilinear. Grade point averages should increase as cognitive quality of life increases, up to the point that cognitive quality of life reaches a moderate level; as quality of life increases from a moderate to high level,

however, grade point averages should decrease. Similarly, grade point averages should increase as affective quality of life increases, up to the point that affective quality of life reaches a moderate level; as quality of life increases from a moderate to high level, however, grade point averages should decrease. Contrary to expectations, however, curvilinear associations were not apparent upon visual inspection of these bivariate scatterplots; instead, the associations seemed to be linear. Linear, as opposed to curvilinear, relationships were also evident upon examination of four additional bivariate scatterplots: (a) cognitive quality of life and self-concept of ability; (b) affective quality of life and self-concept of ability; (c) cognitive quality of life and alienation; and (d) affective quality of life and alienation.

In addition to the bivariate scatterplots, a series of two-way analyses of variance were also conducted. A two-way analysis of variance allows the researcher to examine the interaction effect (also known as a combined or joint effect) of two independent variables--affective quality of life and cognitive quality of life--on one dependent variable--grade point average. To satisfy the assumptions of analysis of variance, cognitive and affective quality of life were each temporarily recoded into three nominal levels: low, medium and high. Ninety respondents with scores between 1.5303 (minimum) and 2.5985 on cognitive quality of life were coded as low, 82 respondents with scores between 2.6060 and 2.8788 were coded as medium, and 82 respondents with scores between 2.9090 and 3.8712 were coded as high. Eighty-one respondents with scores between 1.140 (minimum) and 2.7681 on affective quality of life were coded as low, 79 respondents with scores between 2.7692 and 3.0040 were coded as medium, and 84 respondents with scores between 3.0102 and 3.6604 were coded as high. Table 4.7 contains average student grades, crosstabulated by the three categories of affective quality of life and the three categories of cognitive quality of life. Upon examination of the average grades, it is clear that there is no consistent relationship between the cognitive and affective domains of quality of life. Table 4.8 reports the analysis of variance

statistics that are needed to evaluate the hypothesis of an interaction effect between the cognitive and affective domains of quality of life. The *F* value associated with the affective and cognitive interaction is 1.666, and the observed significance level is approximately .159. Therefore, assuming a .05 level of significance, the null hypothesis that there is no interaction effect between the affective and cognitive quality of life cannot be rejected.

Similarly, an interaction effect between the cognitive domain and the affective domain of quality of life of university students is not statistically significant when the same two-way analysis of variance is conducted with self-concept of ability as a dependent variable, and then alienation as a dependent variable. See Table 4.9: Affective and Cognitive Quality of Life, by Mean Scores on Self-Concept of Ability; Table 4.10: Analysis of Variance Table for Mean Scores on Self-Concept of Ability; Table 4.11: Affective and Cognitive Quality of Life, by Mean Scores on Alienation; and Table 4.12: Analysis of Variance Table for Mean Scores on Alienation.

First, in Table 4.9, there is not a significant difference between self-concept of ability for the six combinations of cognitive and affective quality of life. Table 4.10 reports the analysis of variance statistics that are needed to evaluate the interaction hypothesis. The *F* value associated with the interaction is 1.563, and the observed significance level is approximately .185. Therefore, the null hypothesis that there is no interaction effect between the affective and cognitive quality of life cannot be rejected. Similarly, upon examination of Table 4.11, it is evident that there is no consistent relationship between average alienation scores, crosstabulated by the three categories of cognitive and affective domains of quality of life. Table 4.12 reports the analysis of variance statistics that are needed to evaluate the interaction hypothesis. The *F* value associated with the interaction is 0.966, and the observed significance level is .427. Therefore, the null hypothesis that there is no interaction effect between the affective and cognitive quality of life cannot be rejected.

Table 4.7:

Affective and Cognitive Quality of Life, by Mean Scores on Grade Point Average

Cognitive Quality of Life	Affective Quality of Life		
	Low	Medium	High
	Grade Point Averages		
Low	6.23 (31)	6.00 (29)	6.05 (19)
Medium	5.96 (23)	5.64 (28)	6.26 (23)
High	5.26 (19)	5.88 (17)	5.79 (39)

Note: the number of cases in each cell are presented in parentheses.

Table 4.8:

Analysis of Variance Table for Mean Scores on Grade Point Average

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	9.527	4	2.382	2.103	0.081
Cognitive	8.626	2	4.313	3.809	0.024
Affective	2.633	2	1.317	1.163	0.315
Interaction	7.544	4	1.886	1.666	0.159
Explained	17.071	8	2.134	1.884	0.064
Residual	247.994	219	1.132		
Total	265.066	227	1.168		

Table 4.9:

Affective and Cognitive Quality of Life, by Mean Scores on Self-Concept of Ability

Cognitive Quality of Life	Affective Quality of Life		
	Low	Medium	High
	Self-Concept of Ability		
Low	30.79 (28)	28.55 (29)	28.95 (20)
Medium	29.04 (25)	28.54 (24)	31.55 (22)
High	30.35 (17)	30.87 (15)	31.53 (38)

Note: the number of cases in each cell are presented in parentheses.

Table 4.10:

Analysis of Variance Table for Mean Scores on Self-Concept of Ability

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	194.936	4	48.734	2.288	0.061
Cognitive	72.014	2	36.007	1.690	0.187
Affective	80.157	2	40.078	1.881	0.155
Interaction	133.210	4	33.303	1.563	0.185
Explained	328.146	8	41.018	1.925	0.058
Residual	4452.3	209	21.303		
Total	4780.45	217	22.030		

Table 4.11:

Affective and Cognitive Quality of Life, by Mean Scores on Alienation

Cognitive Quality of Life	Affective Quality of Life		
	Low	Medium	High
	Alienation		
Low	48.80 (30)	46.36 (28)	42.95 (20)
Medium	49.33 (21)	44.63 (24)	41.74 (19)
High	50.28 (18)	44.00 (17)	43.26 (39)

Note: the number of cases in each cell are presented in parentheses.

Table 4.12:

Analysis of Variance Table for Mean Scores on Alienation

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	1614.98	4	403.745	15.795	0.000
Cognitive	25.701	2	12.850	0.503	0.606
Affective	1541.46	2	770.729	30.152	0.000
Interaction	98.779	4	24.695	0.966	0.427
Explained	1713.757	8	214.220	8.381	0.000
Residual	5291.2	207	25.561		
Total	7004.96	215	32.581		

In addition to the bivariate scatterplots and two-way analyses of variance, an interaction variable was used in all of the multivariate structural equation modeling procedures. This interaction variable was created by multiplying the affective quality of life and the cognitive quality of life variables together. In each one of the regression analyses, the standardized regression coefficient for the interaction term was greater than one. Coefficients greater than one should not be interpreted because they indicate that there is serious multicollinearity in the model. Specifically, the bivariate correlation between the cognitive quality of life and the interaction variable is .828, and the correlation between the affective quality of life and the interaction variable is .783. The reader will recall from Chapter III that when variables are correlated at about .70, multicollinearity is a slight problem, but it becomes a more serious problem, when variables are correlated at above .80.

In sum, upon examination of bivariate scatterplots, analyses of variance, and an interaction variable in the main multivariate structural equation modeling procedures, it has been demonstrated that there is not a statistically significant interaction effect between the cognitive and affective quality of university student life.

Summary

In this chapter, the theoretical model guiding the study was empirically tested. Before the effect parameters were calculated, however, the multivariate assumptions of the structural equation modeling procedures were reviewed and verified. These assumptions included: normality, linearity, and homoscedasticity; multicollinearity; an absence of outliers; an acceptable ratio of cases to independent variables; and randomly patterned missing data. First, upon examining residual scatterplots, normal probability plots, and histograms of the standardized residuals, the assumptions of normality, linearity, and homoscedasticity were verified. Then, by examining the zero-order correlation matrix for all variables in the theoretical model, the author determined that multicollinearity was not a problem; there were no correlations close to the critical .70 level. In addition, by utilizing Mahalanobis distances and residual casewise plots, the author determined that outliers were not a significant problem in the data set; and, the 27:1 cases-to-independent variable ratio was acceptable. Finally, on the subject of missing data, the author used *t* tests to determine whether or not missing values in the data set were randomly scattered. Once it was established that there was no pattern to the missing data, the decision was made to conduct all analyses using a pairwise missing data correlation matrix.

Once it was demonstrated that each one of the multivariate assumptions were satisfied, the zero-order correlation matrix for the 11 variables in the theoretical model was presented and briefly discussed. Then, the effect parameters for the quality of life,

individual social psychological dispositions, and the academic attainment of university students were determined for the multiple regression and path analyses. In the first analysis, the effects of social background and university background on both the affective and cognitive domains of quality of life of university students were examined. In the second analysis, the effects of social background, university background, and quality of life of university students on the self-concept of ability and alienation of students were examined. And, in the final analysis, the effects of social background, university background, quality of life of university students, self-concept of ability, and alienation of university students on the academic attainment of students were examined.

Even though there were no significant findings from the first analysis, there were interesting findings in the second analysis. Some of the more notable findings included the effect of year of university, number of credit hours, program, and gender on self-concept of ability. More specifically, females, students enrolled in the secondary program, students with a greater number of years of university experience, and students with heavier course loads, were found to have more positive evaluations of their academic abilities. In addition, number of credit hours, gender, age, socioeconomic status, and affective quality of university student life were each found to be related to alienation. Most significantly, students who had positive interactions with their university professors and peers reported lower alienation than students who did not have these kinds of experiences. In addition, females, older students, students of higher socioeconomic status, and students enrolled in a fewer number of credit hours were found to experience less alienation at university.

Like the second analysis, there were several notable findings from the third and final analysis. Some of the more interesting findings included the effects of year of university, age, affective quality of student life, cognitive quality of student life, self-concept of ability, and alienation on academic attainment.

First, year of university was found to have a marginally significant effect on the academic attainment of students. Specifically, students with more years of university experience attained higher grade point averages than students with fewer years of university experience. Similarly, age was found to have a marginally significant effect on the academic attainment of students, with older students attaining higher grade point averages than younger students. The quality of university student life variables, however, were found to have the largest significant effects on academic attainment. Specifically, students who experienced programs that were warm in the affective domain (in terms of quality interactions with professors and peers) earned higher grades than students who did not experience programs that were affectively warm. In addition, students who experienced programs that were cognitively demanding earned lower grades than students who did not experience programs that were demanding in the cognitive domain. Finally, the individual social psychological variables were also found to have significant effects on students' grades. Students who had higher academic self-concepts attained higher grades than students who had lower academic self-concepts, while students who experienced more alienation attained higher grades than students who experienced less alienation.

The final section of this chapter discussed the theoretically proposed interaction effect between the cognitive and affective domains of the quality of university student life. Upon examining bivariate scatterplots, two-way analyses of variance, and an interaction variable added in the main multivariate structural equation modeling procedures, the author determined that there was not a significant interaction effect between the domains.

A more detailed discussion of all of these findings, and their theoretical, as well as practical implications will be discussed in Chapter V.

CHAPTER V

CONCLUSION

In this final chapter, the most significant aspects of the guiding theoretical framework, the sample, the statistical procedures, and the results are presented in summary form. Next, several points for discussion, which emanate from the main empirical findings, are presented. In addition, the practical and methodological implications of these findings for the quality of post-secondary student life are discussed, with a special focus on prescriptions for further research. This chapter will close with an assessment as to whether or not Roberts and Clifton's measures of the student perception of quality of university student life should be established as performance indicators for universities and colleges.

Summary

Over the last decade there have been calls for increased accountability among institutions of higher education. By developing valid and reliable measures of the quality of universities, and then investigating the impact of such measures on important student outcomes such as learning, sociologists contribute to the creation of valid performance indicators, and therefore make a significant contribution to the assessment and rationalization of post-secondary educational institutions. With these guiding aims in mind, the purpose of this study was to establish theoretically informed and empirically validated measures of the student perception of quality of university student life as performance indicators for institutions of higher education by examining the causal impact of these indicators on student learning. The reader will recall that in Chapter I a performance indicator was defined as a policy relevant statistic, number, or qualitative description that indicates whether or not a university is performing as it should. In other

words, a performance indicator is a result-oriented measure that indicates progress toward an established goal and suggests means of improvement.

Curiously enough, the quality of life in educational institutions has been largely ignored by social scientists who have been concerned with performance indicators. Only one percent of all published articles investigating the quality of life have focused on the educational domain. And, to compound this problem for those sociologists interested in post-secondary education, the quality of university student life has received inadequate attention in the sociological literature, in comparison with the quality of student life in elementary and secondary schools. Specifically, only two isolated exploratory studies (Fraser & Treagust, 1986; Fraser, et al., 1986; Genn, 1975) have examined the linkage between post-secondary students' subjective perceptions of their educational environments and the outcome of satisfaction. Both of these studies used theoretically weak instruments to measure quality of student life, and they did not use sophisticated multivariate statistics to examine the association between the quality of the university environment and important cognitive and behavioral learning outcomes.

Using these two studies as a point of departure, the primary purpose of this study was to determine if the first theoretically informed and empirically validated measures of quality of university student life--Roberts and Clifton's quality of life scales-- could be used to explain a significant amount of the variance in student learning, by employing the multivariate structural equation modeling techniques of multiple regression and path analysis. The reader will recall from Chapter I that Roberts and Clifton's theory of quality of student life and effective learning guided the project. This theory states that when teachers make rational and meaningful demands of their students without sacrificing their ability to understand and support each student's personal integrity and dignity, students are the most likely to make long-term, genuine and enduring changes that are characteristic of effective learning. In other words, Roberts and Clifton conceptualize that the mission of a university, as an institution of learning, is to enhance quality of

student life by stimulating and challenging students' intellects in the cognitive domain (instrumental demandingness) while supporting and enhancing their feelings of dignity and self-worth in the affective domain (expressive warmth) (Roberts & Clifton, 1991: 13).

Within this theoretical context, this project examined a number of factors, in addition to the two domains of quality of university student life, that were believed to be related to student academic attainment. Specifically, a theoretical model was developed to guide this study by measuring the effects of the cognitive and affective domains of quality of university student life on academic attainment, as mediated by important social background, university background, and individual social psychological variables. In order to examine this process, a status attainment approach was used.

Status attainment research examines the effects of peoples' background characteristics and intervening social psychological variables on their later educational attainment. In this study, university background and social background factors were combined with a number of social psychological variables to assess their effects on academic attainment. According to the status attainment research, much of the variation in peoples' educational attainment can be attributed to a variety of social psychological processes that occur within educational institutions. In my research, it was argued that students' positive affect, interactions with professors and peers, perceptions of cognitive demands, as well as academic self-concepts and feelings of alienation all have significant effects on academic attainment. From a slightly different perspective, in order for students to realize their academic potential, several conditions must be present. First, they must experience programs that are both demanding in the cognitive domain and warm in the affective domain. Second, they must experience the university environment as non-alienating and have the academic self-concepts that are adequate to cope with the demands of a university education. Alternately, it was argued that if students do not have

such experiences and do not possess such personal attributes, they are less likely to achieve their academic potential.

In order to examine the impact of quality of university student life on academic attainment, a theoretical model comprised of 11 variables was developed in Chapter III. Three university background variables were measured, including year of university, number of credit hours, and program. Moreover, three social background variables were measured, including gender, age, and socioeconomic status. The two quality of university student life variables measured were affective quality of life and cognitive quality of life, while the two individual social psychological variables were self-concept of ability and alienation. Finally, the outcome variable, academic attainment, was cumulative grade point average.

This project was based on a 1992 study, conducted by Roberts and Clifton, to examine the quality of student life in the Faculty of Education at the University of Manitoba. Using a stratified random cluster sampling procedure, 27 percent of the population of students within each year of the 4-year undergraduate education program were selected. In total, 269 students were included in the study. The sample was also discussed in Chapter III.

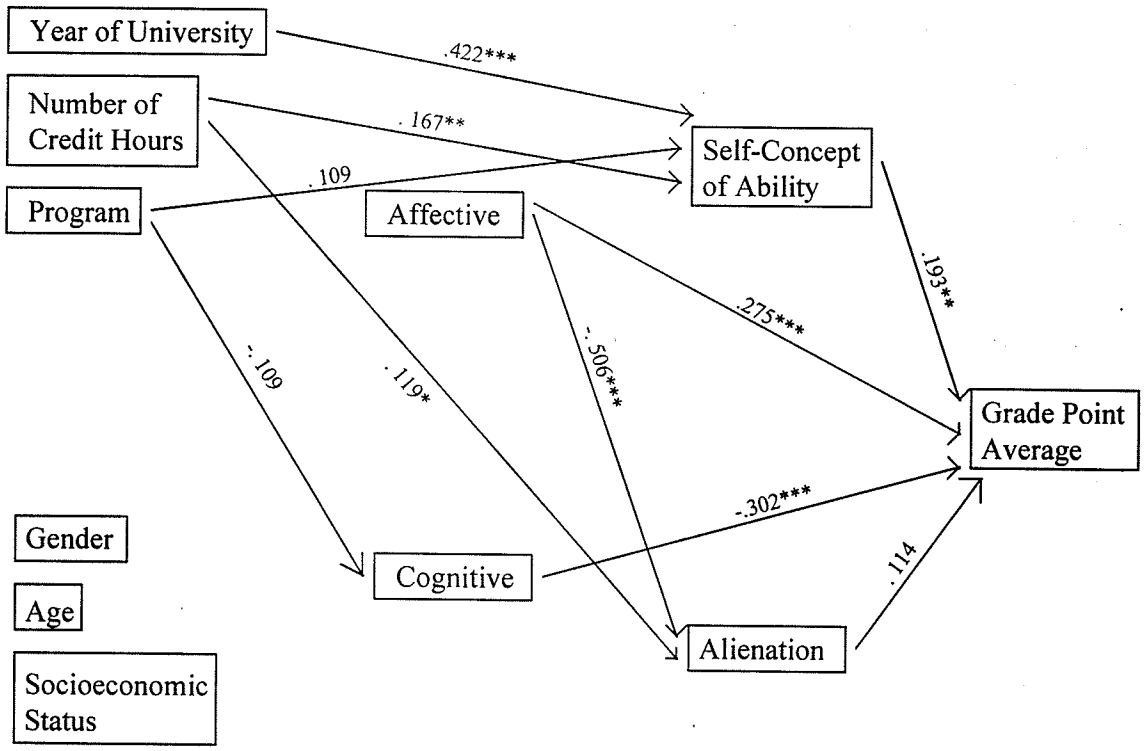
The main statistical analyses followed a structural equation modeling approach, which involves the diagramming out of the relationships between the various independent and dependent variables in the theoretical model and testing the relationships through a series of multiple regression analyses. This approach not only allows researchers to work back and forth between the theory and the data, but also allows them to decompose the direct and indirect effects of the correlations between the variables. The final section in Chapter III presented the research methodology used in the study.

The theoretical model was tested by means of three main multivariate analyses in Chapter IV. In the first analysis, the effects of social background and university background on both the affective and cognitive domains of quality of life of university

students were examined. In the second analysis, the effects of social background, university background, and quality of life of university students on the self-concept of ability and alienation of students were examined. In the final analysis, the effects of social background, university background, quality of life of university students, self-concept of ability, and alienation of university students on the academic attainment of students were examined. A summary of the direct effects greater than .100 in all three phases of testing the theoretical model is summarized in Figure 5.1.

Figure 5.1:

Significant Direct Effects in the Overall Theoretical Model



Even though there were no significant findings from the first analysis, there were interesting findings in the second analysis. Some of the more notable findings included the effect of year of university, number of credit hours, program, and gender on self-concept of ability. More specifically, females, students enrolled in the secondary program, students with a greater number of years of university experience, and students with heavier course loads, were found to have more positive evaluations of their academic abilities. In addition, number of credit hours, gender, age, socioeconomic status, and affective quality of university student life were each found to be related to alienation. Most significantly, students who had positive interactions with their university professors and peers reported lower alienation than students who did not have these kinds of experiences. In addition, females, older students, students of higher socioeconomic status, and students enrolled in a fewer number of credit hours were found to experience less alienation at university.

The findings generated from the final phase of testing the theoretical model suggested that university background, social background, quality of university student life, and individual social psychological factors all contribute, in varying degrees, to the academic attainment of university students. Specifically, only one university background variable was found to have a marginally significant effect on the academic attainment of students. Students with more years of university experience attained higher grade point averages than students with fewer years of university experience. In addition, one social background variable was found to have a marginally significant effect on the academic attainment of students, with older students attaining higher grade point averages than younger students.

The quality of university student life variables, however, were found to have the largest significant effects on academic attainment. Specifically, students who experienced programs that were warm in the affective domain (in terms of quality interactions with professors and peers) earned higher grades than students who did not

experience programs that were affectively warm. In addition, students who experienced programs that were cognitively demanding earned lower grades than students who did not experience programs that were demanding in the cognitive domain.

Finally, the individual social psychological variables were also found to have significant effects on students' grades. Students who had higher academic self-concepts attained higher grades than students who had lower academic self-concepts, while somewhat surprisingly, students who experienced more alienation attained higher grades than students who experienced less alienation. This latter finding was perplexing because the literature suggested that higher alienation would result in lower academic attainment.

The findings of this study also indicated that the cognitive and affective domains of quality of university student life do not interact in the manner predicted by the theory underlying the quality of university student life instruments. Specifically, Roberts and Clifton predict that the specific combination of moderate levels of cognitive and affective quality of life is the most conducive to facilitating long-term effective learning. An examination of bivariate scatterplots, analyses of variance, and an interaction variable in the main multivariate structural equation modeling procedures, all failed to reveal a statistically significant interaction effect between the cognitive and affective quality of university student life variables in relation to grade point average, self-concept of ability, or alienation.

Overall, the findings of this study provide partial support for Roberts and Clifton's theories of quality of student life and effective learning. The degree to which an academic institution is perceived as warm, and the degree to which it is perceived as being demanding, have the largest impact on student academic attainment. Moreover, the findings suggest that the effect of the quality of university student life variables on academic attainment is largely direct, rather than being mediated through the individual social psychological dispositions of self-concept of ability and alienation.

Discussion

Three points for discussion emanate from the main empirical findings of this study. First, an evaluation of the contribution of this study in relation to the existing quality of student life literature is presented. Secondly, policy advice, which is based on the largely direct effects of the quality of student life variables, is offered. Finally, alternate conceptualizations of the relationship between the cognitive and affective quality of student life are given to explain the separate, independent effects of each domain on the outcome variable of grade point average.

On the whole, this study's findings replicate considerable prior research at the elementary, secondary, and post-secondary school levels--all of which were described in detail in Chapter II. Readers will recall that a review of over fifty studies of environment-outcome associations in both primary and secondary settings provided convincing and consistent support for the predictive validity of student perceptions of the psychosocial characteristics of their classrooms in accounting for appreciable amounts of variance in cognitive, attitudinal, and behavioral learning outcomes, often beyond that attributable to student background characteristics (Fraser, 1980; 1985; 1986). And, at the post-secondary level, two studies (Fraser & Treagust, 1986; Fraser et al., 1986; Genn, 1975) used bivariate and simple multivariate statistical analyses to provide tentative support for the notion that a university student's subjective perception of the nature of quality of life in classrooms affects the attitudinal learning outcome of student satisfaction. First, by linking satisfaction among 137 Australian education students with their perceptions of faculty press (press attributable to the behavior of teachers), Genn (1975) found that student satisfaction was higher where the faculty was perceived to be characterized by more humanism, welfare, and scientism, and less practicality. Specifically, satisfaction with teaching correlated with faculty press for humanism (0.58), for welfare (0.56), for scientism (0.37), and for practicality (-0.21) (Genn, 1975: 78). Secondly, Fraser and his colleagues (Fraser & Treagust, 1986; Fraser et al., 1986) studied 372 Australian and

American students and found that student satisfaction was higher in classes characterized by greater personalizaton, involvement, student cohesiveness, task orientation, innovation, and individualization. By extending this simple correlational analysis to a multiple regression analysis, the researchers were able to provide a multivariate test of the joint influence of the set of six environment variables on the outcomes and the unique contribution to outcome variance made by each individual climate scale. From this analysis, they found that the multiple correlation between the outcome measure of satisfaction and the set of six environmental scales was 0.86. Moreover, 74 percent of the variance in student satisfaction was accounted for by students' perceptions of personalization, involvement, student cohesiveness, task orientation, innovation, and individualization. Taken together, these six environmental variables measured the affective warmth of the university. Therefore, by building upon these earlier studies of quality of student life to create a more sophisticated multivariate theoretical model, this study provided convincing support for the predictive validity of student perceptions of the affective *and cognitive* quality of life in accounting for an appreciable amount of variance in the cognitive learning outcome of grade point average. Moreover, like the majority of research conducted at the elementary and secondary level, quality of student life variables accounted for greater variance than that for social and university background variables.

While the first point examined how the main findings of this study replicate and build upon the existing quality of student life literature, this next point relates specifically to the finding that the effects of the quality of university student life variables on academic attainment are largely direct, rather than being mediated through the individual social psychological dispositions of self-concept of ability and alienation. Specifically, the effect of the affective quality of university student life on grade point average was slightly suppressed by the individual social psychological variables, and the effect of the cognitive quality of life on grade point average was not mediated or suppressed by the social psychological variables. This suggests that the quality of student life variables,

while they are perceptions, are acting like institutional or social structural variables, as opposed to social psychological or personality variables.[29] Following this line of reasoning, it is the structural characteristics of the classroom climate, or the management of the cognitive and affective relations in the classroom, that directly impacts on students' grades. Specifically, in classrooms that are structured to be highly warm, students are more likely to attain high grades; but conversely, in classrooms that are organized to be highly challenging, students are less likely to attain high grades. The policy advice that emanates from this finding is that if professors want to ameliorate the grades that students attain in their classes, they should not intervene at the psychological level by attempting to improve students' academic self-concepts or curtail their feelings of alienation; instead, professors should focus on improving the structural affective relations between all of the class members--student-to-student and student-to-professor. Specific strategies that professors can use to improve affective relations in the university classroom context are provided in the following section on implications.

The third and final point for discussion elaborates on a statement made at the conclusion of the summary--the results of this study provide only partial support for Roberts and Clifton's theory of effective learning and quality of student life. The reader will recall from Chapter I that Roberts and Clifton postulate that even though the cognitive domain and the affective domain are separate dimensions, they are not independent of each other; theoretically, the dimensions should be related in an inverse manner. They argue that, at some point, the more professors are empathic and identify with their students, the less they will be able to make demands on them; conversely, the more professors make demands on their students, the less likely it is that they will be perceived by their students as being empathic. In other words, demandingness and

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[29] This conclusion is contrary to discussion in Chapter I, where it was stated that the quality of university student life variables are to be seen as intervening social psychological variables in a status attainment model.

warmth form a continuum such that enlarging one of these dimensions compresses the other.

In contrast with this theory, the results of the study revealed that the cognitive domain and the affective domain of the quality of life each have separate, independent effects on grade point average. Specifically, the affective domain positively affects academic attainment, while the cognitive domain negative affects academic attainment. In other words, students who perceive their classes to be demanding are less likely to attain high grades than students who do not perceive their classes to be demanding; and, conversely, students who perceive their classes to be friendly and nurturing are more likely to attain high grades than students who do not perceive their classes to be warm. Even though these independent effects do not provide support for Roberts and Clifton's notion that the mission of a university, as an institution of learning, is to enhance quality of student life by stimulating and challenging students' intellects in the cognitive domain, while supporting and enhancing their feelings of dignity and self-worth in the affective domain, they do make intuitive sense. If students feel that they are being bombarded with a high volume of intellectual demands, they are less likely to attain high grades, whereas if they feel that their professors and other students care about them, they are more likely to attain high grades. Demandingness and warmth, in this respect, work in opposition to each other. From the perspective of professors, if they increase the demands of their courses, it will probably result in a decrease in their students' academic performances. If on the other hand, they increase the warmth of the social environment in the classroom, it will probably result in an increase in their students' academic performances.

Moreover, an analysis of the results of bivariate scatterplots, two-way analyses of variance, and structural equation modeling procedures did not reveal a statistically significant interaction effect between the cognitive and affective domains of quality of life for the outcome variables of grade point average, self-concept of ability, or alienation. Thus, there does not appear to be a point where the more professors are empathic and

identify with their students, the less they will be able to make demands on them. In addition, there does not appear to be a point where the more professors make demands on their students, the less likely it is that they will be perceived by their students as being empathic. In other words, increasing demandingness does not inevitably lead to decreasing warmth, and increasing warmth does not inevitably lead to decreasing demandingness. Therefore, as far the author can determine at this point, a highly demanding professor can still be highly supportive, and a highly supportive professor can still be highly demanding.

On the whole, these findings suggest that an alternate conceptualization is necessary to explain the relationship between the cognitive and affective domains of quality of life as they affect the outcome variable of grade point average. Specifically, Kleinfeld's (1975) characterization of the relationship between the two domains provides a more accurate conceptualization of this study's findings. Kleinfeld conceptualizes that the dimension of "personal warmth versus professional distance" is orthogonal to the dimension of "active demandingness versus passive understanding" (Kleinfeld, 1975: 329).[30]

Now that the discussion of this study's findings is complete, the focus will turn to a review of implications.

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[30] In contrast with Roberts and Clifton's typology of three teaching styles (high demandingness and low warmth, moderate demandingness and moderate warmth, and high warmth and low demandingness), Kleinfeld classified teachers into four ideal types (high demandingness and low warmth--"traditionalists", high demandingness and high warmth--"warm demanders", high warmth and low demandingness--"sentimentalists", and low warmth and low demandingness--"sophisticates").

Implications

The findings of this research project carry several implications for both practice and future research.

Policy Implications

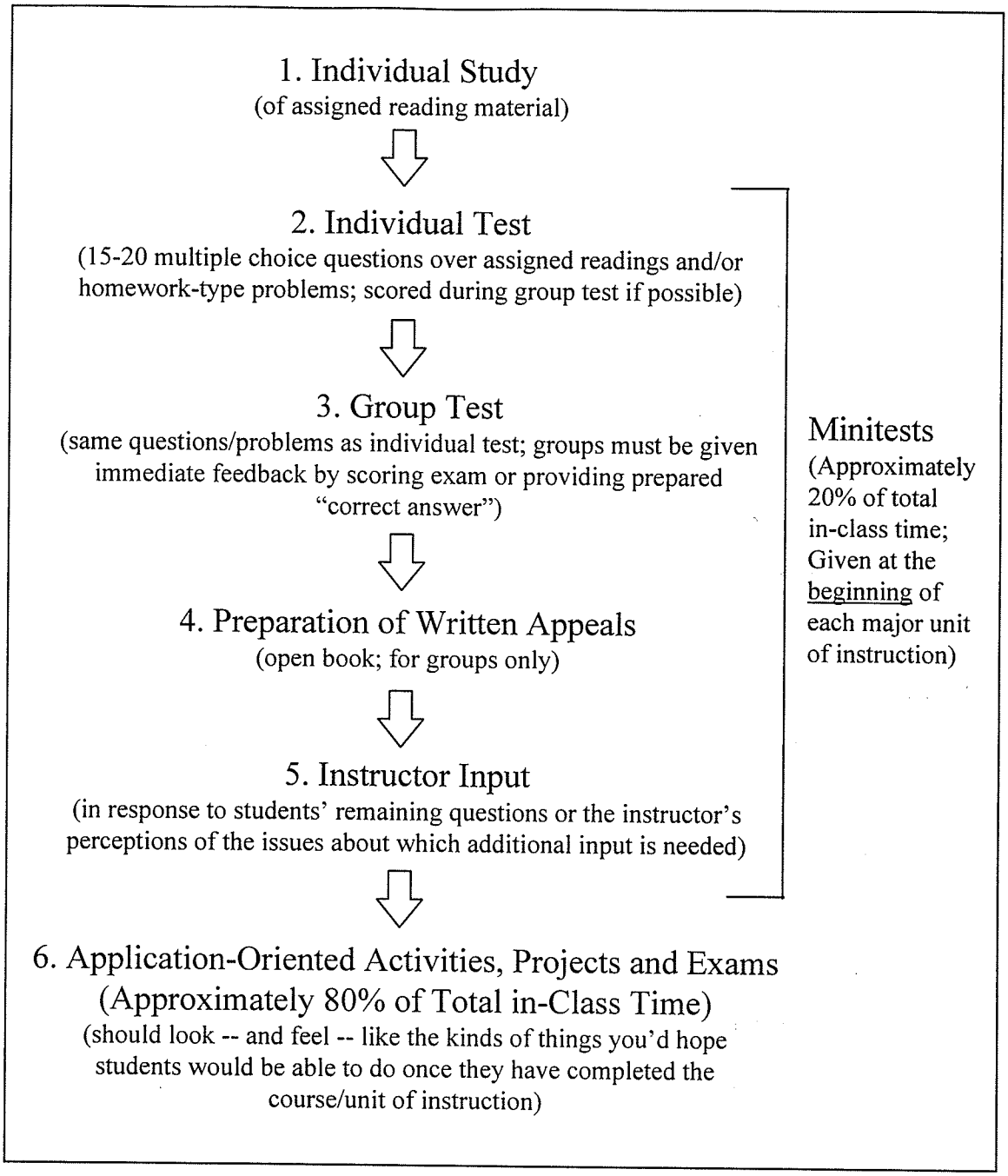
A primary implication for practice centers on the significant positive effect that the affective domain of quality of student life has on grade point average. This is in keeping with the mission of a university, as an institution of learning, to enhance quality of student life by supporting and enhancing students' feelings of dignity and self-worth in the affective domain. This finding provides valuable advice to professors who are interested in doing something to improve their students' grade point averages. Professors need to focus on the nature of their relationships with students, and their students' interrelationships with each other, because warmth has been found to be a central dimension of the classroom environment related to academic achievement. In other words, when other variables are controlled, students will earn higher grades in classes where professors attempt to build rapport with and between students, as opposed to assuming the role of impersonal, or emotionally distant professional. In developing these types of relationships, professors will be creating an important form of "social capital" (Coleman, 1988). This type of capital is a resource that can be accumulated, and used by individuals for achieving their interests. In short, a university student in classrooms with substantial social capital is a student who can draw upon the warm relationships with his or her professors and peers to achieve his or her academic goals. While building warm, student-to-professor relationships both inside and outside of the classroom, and encouraging the students in classroom to build warm relationships with each other may seem difficult for professors to achieve in large classes, it is possible. The "Team Learning" approach to classroom organization (see Michaelsen, Watson, Cragin, & Fink, 1982; Michaelsen, Watson, & Schraeder, 1985) is an procedural example of how social

capital can be enhanced in a classroom of any size. In contrast with traditional lecture-oriented classes, team learning is a comprehensive, small group-based instructional method that was originally developed to facilitate active learning in large classes, but has subsequently proven to be effective in a wide variety of instructional settings to increase both student-to-professor and student-to-student cooperation and warmth. These include class sizes ranging from 10 to 280 students, with courses in over 30 academic disciplines, and with students ranging from freshmen on academic probation, through doctoral-level students, and even participants in corporate-sponsored professional and management development courses (Michaelsen, 1992: 107-109). The four primary features of this approach include (Michaelsen, 1992: 109):

> (1) permanent and purposefully heterogeneous work groups; (2) grading based on a combination of individual performance, group performance and peer evaluation; (3) the majority of the class time devoted to small group activities (necessitating a shift in the role of the instructor from dispenser of information to manager of the learning process); and (4) a six-step instructional activity sequence, repeated several times per term [see Figure 5.2] that makes it possible to focus the majority of class time on helping students develop the ability to use concepts as opposed to simply learn about them (i.e., develop higher level cognitive skills, Bloom, 1956).

Figure 5.2:

Team Learning Instructional Activity Sequence [a]



[a] From Michaelsen (1992: 110).

If enhancing social capital between professors and students in the university environment is important for students to attain high grades, it follows that universities need to be more responsive to building a sense of community on campus. But what is community? According to Etzioni (1996: 5), community can be defined, with reasonable precision, by three characteristics:

> (1) A community entails a web of *affect*-laden [italics added] relations among a group of individuals, relations that often crisscross and reinforce one another (rather than merely one-on-one relations or chains of individual relations); and, (2) community requires a commitment to a set of shared values, norms, and meanings, and a shared history and identity - in short a shared culture . . . . (3) Communities are characterized by a relatively high level of *responsiveness* [italics added]. This third characteristic excludes social entities that oppress their members: It defines as partial communities those that are responsive to some members or subgroups, but not to all; it characterizes as unauthentic [sic] those communities that respond to the false needs of members rather than to their true needs.

A responsive and authentic university community, or *gemeinschaft* in Tonnies (1957) words, is characterized by warm and reinforcing affective relationships between students and their peers, as well as students and their professors. A university or college is responsive if the values it fosters and the form of its structure reflect students' true needs, as opposed to needs that have been falsely implanted. Thus, a responsive university is one in which students' needs for a warm and nurturing environment is met.

While important, creating responsive communities within post-secondary educational institutions has become increasingly difficult. Like the large economic conglomerates of capitalist enterprise, big labor, and other growing bureaucracies, many universities have become what are known as "megastructures" (Berger & Neuhaus, 1977: 2). The megastructures specific to the public sphere are typically large and alienating,

and, as such, they are not helpful in providing meaning and identity for individual existence. When institutions become too large, the individuals within them "get lost". When students get lost in a university megastructure, they lose their self-respect and dignity, they become alienated, and they feel that they do not belong because few people care about them; consequently, their grades suffer.

Higher education administrators and professors can, however, transform the large university megastructures into more responsive institutions by creating what are known as "mediating structures" (Berger & Neuhaus, 1977: 2-3) or "civil society" (Keane, 1988). By definition, mediating structures are those institutions that stand between and moderate the relations of the individual in his or her private life and the large institutions of public life. Mediating institutions help sustain a civil society that is a local community-based alternative to both the self-interest of the market and the coercive authority of the state. Universities can act as mediating structures when they can ensure that the individuals who are members feel more "at home". When students feel at home in a mediating structure within a university, they gain self-respect and dignity, they do not become alienated, and they feel that they belong because many people care about them; consequently, their grades improve.

The impetus behind the development of mediating structures is empowerment. One of the most debilitating results of modernization is a feeling of alienation in the face of institutions, like universities, controlled by people we do not know and whose values we often do not share. In contrast, mediating structures are principal expressions of the real values and the real needs of people who participate in such structures. They are, for the most part, "people-sized institutions", and public policy should recognize, respect, and, where possible, allow these institutions to develop and expand (Berger & Neuhaus, 1977: 7).

How can universities be empowered to function more like people-sized mediating structures and less like alienating megastructures? The answer is to create smaller

mediating structures, or communities, within large universities. A recent example of this phenomenon at the University of Manitoba is the growth of "opportunity courses". Opportunity courses are small-sized classes taught by professors who are members of a small college, and are primarily available to students who are members of that college. The structure of these courses not only facilitates the development of personal relationships between students, who are all members of a small college on a large campus, it also facilitates the development of student-to-professor and student-to-student relationships both inside and outside of the classroom because students and professors share the common bond of college membership and all of the extra-curricular activities associated with it ("Courses 96-97," 1996).

Another example of building community on a large campus is the community-based study program. These courses, often provided by divisions of continuing education, combine the strengths of print-based courses with teleconference and other media to offer students the opportunity to study in a classroom situation in their own small communities outside of the large urban centers. There are sixteen community based sights in southern Manitoba for students of the University of Manitoba (University of Manitoba, 1996: 391). Both examples illustrate the point that a university, like any other public institution, can rearrange the traditional classroom environment to facilitate building stronger affective bonds, or social capital, between students and professors. Augmenting affective bonds between students and professors should, however, be executed without sacrificing the intellectual demands that make the experience "university level work".

Research Implications

The previous discussion noted that the analyses conducted in this study (an examination of bivariate scatterplots, two-way analyses of variance, and structural equation modeling procedures) did not reveal a statistically significant interaction effect

between the cognitive and affective domains of quality of life for the outcome variables of grade point average, self-concept of ability, or alienation. There are two possible explanations for these findings. Either the theory of effective learning and quality of student is wrong, or the method of testing the interaction effect needs to be improved. Upon reflection, the latter explanation seems to be the more plausible of the two options. The most significant problem with the method of testing the interaction effect in this project centered on the dependent variable--or the operationalization of long-term effective learning as grade point average. In Roberts and Clifton's model, effective learning is a process of overcoming resistance to change and establishing long-term changes. In this study, however, academic attainment, as measured by grade point average, is an outcome related to a particular time. In short, it is not likely that grade point average is a measure of knowledge gained from a particular course of studies. It is more likely that grade point average serves as evidence of certification of the completion of course requirements.

To better test Roberts and Clifton's theory, future research in this area should be more longitudinal and measure how much difference a course makes to a student's knowledge base. To do this, a measure of students' knowledge level of the content of a particular course could be administered in that course during the first week of classes. Then, either at the midpoint or at the end of the term, the same measure of students' knowledge level of the course content could be re-administered. The difference between each student's score at the beginning of the term and either the midpoint or the end of the term would be a measure of the knowledge that a student gained in that subject over the course of the term.[31] Even though the mechanics of measuring students' knowledge level

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[31] For example, suppose Student A and Student B are both enrolled in Course X, and both students are administered a test of their knowledge of the content of Course X at the beginning of the term and again at the end of the term. It would be clear that Student A learned more than Student B in Course X if, Student A's first test score was a grade of 'F' and second test score was a grade of 'C', and Student B's first test score was a grade of 'B'

of course content at the beginning and end of the term is more costly and time consuming for researchers to execute, the real benefit of measuring learning as a process that occurs over time, as opposed to an outcome related to one specific time, cannot be understated. If longitudinal research is not possible, however, researchers may be able to measure learning in a questionnaire administered only once at the end to the term if they ask students to divulge their final course grade along with their perception of the grade that they would have received if a test of their knowledge of the course's content was administered before the course began. Therefore, Roberts and Clifton's conceptualization of the relationship between the domains of quality of life may be validated by future research if knowledge level of course content is substituted for grade point average as a dependent variable in the theoretical model.

There are other implications for future research that stem from the execution of this project. First, with 11 variables in the theoretical model, this study's explanatory power was limited. The reader will recall, from a discussion of results in Chapter IV, that 15 percent (.146) of the variance in grade point average was explained by the 10 independent variables. Therefore, future researchers should build upon this study's theoretical model. Specifically, they should consider adding more variables--particularly social psychological variables such as educational ambition, and family environment variables such as parents' press for achievement and familial involvement (Marjoribanks, 1979, 1980). Although traditionally, the influence of parents has been thought to gradually decline during the school years, some researchers such as Anderson (1988) and Munro (1981), have reported that parental aspirations have significant effects on the attrition of university students. In other words, students whose parents have high

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and second test score was a grade of 'A'. If only the second, or final test score was used, however, the opposite conclusion would be reached. The researcher would falsely conclude, upon examination of grades at the conclusion of Class X, that Student B learned more than Student A.

aspirations for them are less likely to drop out of high school, university, and college than students whose parents do not have such aspirations. As Bank, Slavings, and Biddle (1990: 210) have argued, "it seems more likely that parents continue to be actively involved in the lives of their college-age children and that these children take their parents' expectations and behaviors into account in formulating their own educational goals."

Researchers should also consider improving the measures of variables in the existing theoretical model. Ideally, a study of this kind should track the same students over a period of time in order to more accurately observe how their perceptions change as a function of time. Specifically, quality of student life and individual social psychological variables should be treated as dynamic processes. To do this, measures of students' quality of life, self-concept of ability, and alienation in a particular course or program could be administered at the midpoint of the term; then, at the end of the term, the same measures could be re-administered.

Finally, further study should be conducted using larger sample sizes (generated by rigorous and sophisticated sampling procedures), from student populations in university faculties other than education, in community college programs, and in other Canadian and North American cities.

This project began by discussing the university's accountability to students, the taxpaying public, and politicians; moreover, performance indicators were presented as valid means of evaluating the quality of educational institutions and enhancing knowledge-based accountability. Even though this project faced methodological and theoretical limitations that deserved commentary and debate, there is no doubt that the measured influences of the cognitive and affective domains of the quality of university student life are most important variables to explain the variance in academic attainment. Therefore, this study's findings provide empirical support for the argument, first proposed by Beck (1990), that the quality of student life, as perceived by students, should be a

principal yardstick for measuring the worth of educational institutions. So, in closing, it is possible to conclude that Roberts and Clifton's theoretically informed and empirically validated measures of the student perception of quality of university student life can and should be established as meaningful performance indicators for institutions of higher education. On the whole, this project has established a firm foundation that can be built upon by future researchers interested in developing additional performance indicators of universities and colleges.

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Appendix A:

Quality of Life in the Faculty of Education Questionnaire (1992)

THE UNIVERSITY OF MANITOBA

QUALITY OF LIFE IN THE FACULTY OF EDUCATION

This questionnaire is about your life in, and your attitudes toward, the Faculty of Education. There are no right or wrong answers – we are just trying to find out how students feel about their experience in the Faculty. We are interested in your honest opinions.

PART I

Each item below says that **The Faculty of Education is a place where** some particular thing happens to you or you feel a particular way. We would like you to respond to each statement by checking one of the response categories provided.

Please read each item carefully and check the answer which best describes how you feel. Keep in mind that the phrase **"The Faculty of Education is a place where. . ."** applies to each item. **Check one box for each statement.**

The Faculty of Education is a place where . . .	Strongly Agree	Agree	Disagree	Strongly Disagree
. . . the things I learn are important to me	☐	☐	☐	☐
. . . people look up to me.	☐	☐	☐	☐
. . . professors treat me fairly.	☐	☐	☐	☐
. . . I feel depressed	☐	☐	☐	☐
. . . I find it easy to get to know other people.	☐	☐	☐	☐
. . . I really get involved in my work.	☐	☐	☐	☐
. . . I like learning	☐	☐	☐	☐
. . . I enjoy being.	☐	☐	☐	☐
. . . I feel restless.	☐	☐	☐	☐
. . . professors give me the marks I deserve	☐	☐	☐	☐
. . . I have acquired skills that will be of use to me.	☐	☐	☐	☐
. . . I achieve a satisfactory standard in my work.	☐	☐	☐	☐
. . . people care about what I think	☐	☐	☐	☐
. . . professors take a personal interest in helping me with my work.	☐	☐	☐	☐
. . . I am treated with respect.	☐	☐	☐	☐
. . . mixing with other people helps me to understand myself	☐	☐	☐	☐
. . . the things I learn will help me in my life.	☐	☐	☐	☐
. . . people think a lot of me.	☐	☐	☐	☐
. . . professors help me to do my best	☐	☐	☐	☐
. . . I get upset.	☐	☐	☐	☐
. . . I am given the chance to do work that really interests me.	☐	☐	☐	☐
. . . the things I am taught are worthwhile learning	☐	☐	☐	☐
. . . professors are fair and just.	☐	☐	☐	☐
. . . I really like to go each day.	☐	☐	☐	☐
. . . I feel worried	☐	☐	☐	☐
. . . the work I do is good preparation for my future.	☐	☐	☐	☐
. . . other students accept me as I am.	☐	☐	☐	☐
. . . I have learned to work hard	☐	☐	☐	☐
. . . I get on well with the other students in my class.	☐	☐	☐	☐
. . . I find that learning is a lot of fun.	☐	☐	☐	☐
. . . professors listen to what I say	☐	☐	☐	☐

PART II

Different people have different ideas about the overall quality of education received in the Faculty of Education. Listed below are some things that students and professors have said are important.

Please assess each statement by checking the response which best describes your experience. Remember that the phrase "**In the Faculty of Education, I have been challenged to . . .**" applies to each item. **Check one box for each statement.**

In the Faculty of Education, I have been challenged to . . .	Strongly Agree	Agree	Disagree	Strongly Disagree
. . . remember an extensive number of new terms	☐	☐	☐	☐
. . . translate complicated ideas into everyday language.	☐	☐	☐	☐
. . . demonstrate how theories are useful in real life.	☐	☐	☐	☐
. . . identify organizing principles in my courses	☐	☐	☐	☐
. . . design my own plans in completing assignments.	☐	☐	☐	☐
. . . logically defend a course of action.	☐	☐	☐	☐
. . . recall a substantial number of new concepts.	☐	☐	☐	☐
. . . translate difficult concepts into my own words.	☐	☐	☐	☐
. . . use theories to address practical questions.	☐	☐	☐	☐
. . . analyze complex interrelationships between concepts	☐	☐	☐	☐
. . . organize ideas into themes.	☐	☐	☐	☐
. . . evaluate alternative solutions to problems.	☐	☐	☐	☐
. . . recall a lot of factual information	☐	☐	☐	☐
. . . interpret the meaning of new facts and terms.	☐	☐	☐	☐
. . . illustrate abstract ideas with concrete examples.	☐	☐	☐	☐
. . . identify assumptions underlying theories	☐	☐	☐	☐
. . . develop new ideas based on theories.	☐	☐	☐	☐
. . . detect missing parts in arguments.	☐	☐	☐	☐
. . . remember an extensive number of facts	☐	☐	☐	☐
. . . understand difficult ideas.	☐	☐	☐	☐
. . . use theoretical ideas to address practical problems.	☐	☐	☐	☐
. . . identify the reasoning underlying theories	☐	☐	☐	☐
. . . solve problems by integrating theories.	☐	☐	☐	☐
. . . judge the logic of written arguments.	☐	☐	☐	☐
. . . recall a significant number of facts	☐	☐	☐	☐
. . . translate a variety of technical terms into ordinary language.	☐	☐	☐	☐
. . . apply theories to new situations.	☐	☐	☐	☐
. . . identify the basic ideas in theories	☐	☐	☐	☐
. . . make original contributions to classroom discussions.	☐	☐	☐	☐
. . . identify the strengths and weakness of arguments.	☐	☐	☐	☐
. . . remember complex facts	☐	☐	☐	☐
. . . interpret the meaning of complicated charts and graphs.	☐	☐	☐	☐
. . . apply theoretical principles in solving problems.	☐	☐	☐	☐
. . . illustrate how the different aspects of my discipline are related	☐	☐	☐	☐
. . . organize ideas in new ways.	☐	☐	☐	☐
. . . identify bias in written material.	☐	☐	☐	☐

PART III

In the following four sections, we ask you to tell us how you feel about yourself, both as a propsective teacher and as a student in the Faculty of Education.

Section 1

The following statements concern your personal feelings and thoughts about becoming a teacher. Read each statement carefully since no two are exactly alike. If a statement is TRUE or MOSTLY TRUE as applied to you, circle the **T** in front of the statement. If a statement is FALSE or MOSTLY FALSE as applied to you, circle the **F** in front of the statement.

MOSTLY TRUE	MOSTLY FALSE	
T	F	1. When people are discussing the topic of teaching, I probably will listen and/or join the conversation.
T	F	2. If I come across an article related to teaching, I probably will read it with interest.
T	F	3. If problems develop in my life, I try to think them through as they will affect my teaching.
T	F	4. With respect to teaching, I don't care if I make mistakes.
T	F	5. During the past week, I have had **no** conversations about teaching.
T	F	6. During the past week, I have made 10 or more decisions in which my interest in teaching has influenced the decision process.
T	F	7. I rarely or never think about how I can become a better teacher.
T	F	8. Compared to other concerns, I worry little about how good a teacher I will be.
T	F	9. If I had to give up something, becoming a teacher is the last thing I would give up.
T	F	10. When I am involved in activities related to teaching, I usually feel indifferent.
T	F	11. If I become a better teacher than everyone else, it would make little difference to me.
T	F	12. When I can, I seek out situations in which I can express myself as a teacher.
T	F	13. Being a teacher is **not** important to me.
T	F	14. I feel bad when I think I am not going to be a good teacher.
T	F	15. I rarely devote much time to my teaching interests.
T	F	16. When I meet new people, it is important to me that they know I will be a teacher.
T	F	17. I typically organize my day so that I can work toward goals that are related to teaching.
T	F	18. Being a teacher is of little value to me.
T	F	19. Being a teacher will have virtually no effect on my life.
T	F	20. I enjoy it when people encourage me to become a teacher.
T	F	21. I would feel a great sense of loss if suddenly I were unable to be a teacher.
T	F	22. I am strongly committed to being a good teacher.
T	F	23. If people could know only one thing about me, I would want them to know I will be a teacher.

Section 2

Please think about the experiences students have in this faculty, and give your opinion about each of the following statements. **Check one box for each statement.**

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. It is almost impossible for one student to really understand the feelings of another.	☐	☐	☐	☐
2. Too many people in this faculty are just out for themselves.	☐	☐	☐	☐
3. These days, students do not really know who to count on.	☐	☐	☐	☐
4. There is not much chance that students will do anything to make this faculty a better place to learn.	☐	☐	☐	☐
5. If classes were smaller, grades would better reflect true ability.	☐	☐	☐	☐
6. Success in this faculty is more dependent on luck than on real ability.	☐	☐	☐	☐
7. There is no one in this faculty that students can really trust.	☐	☐	☐	☐
8. In spite of what some people say, the lot of the student is getting worse.	☐	☐	☐	☐
9. There is little use in talking to professors because they are not interested in the problems of students.	☐	☐	☐	☐
10. Most students do not realize how much their lives are controlled by the decisions made by others.	☐	☐	☐	☐
11. Few students look forward to their course work.	☐	☐	☐	☐
12. Most students play an active role in class.	☐	☐	☐	☐
13. It is really best to tell professors what they want to hear.	☐	☐	☐	☐
14. Students will do almost anything to get good grades.	☐	☐	☐	☐
15. Most students do not enjoy their courses but do the work in order to get the things they want.	☐	☐	☐	☐
16. The grades students receive will be an accurate reflection of their true ability.	☐	☐	☐	☐
17. The final grades students receive will have an effect on their future status.	☐	☐	☐	☐
18. There are many students who do not know what to do with their lives.	☐	☐	☐	☐
19. Many students in this faculty are lonely.	☐	☐	☐	☐
20. Students are unhappy because they do not know what they want out of life.	☐	☐	☐	☐
21. Students expect to learn a lot in this faculty.	☐	☐	☐	☐

Section 3

We are trying to learn more about how undergraduates feel about their own academic abilities. Please respond to the following items by checking the box that **best answers** each question.

1. Think of your university friends. Do you think you can do your university course work
   - . . . better than all of them. ☐
   - . . . better than most of them. ☐
   - . . . about the same. ☐
   - . . . poorer than most of them. ☐
   - . . . poorer than all of them. ☐

2. Think of the students in your faculty. Do you think you can do your university course work
   - . . . better than all of them. ☐
   - . . . better than most of them. ☐
   - . . . about the same. ☐
   - . . . poorer than most of them. ☐
   - . . . poorer than all of them. ☐

3. When you complete your undergraduate degree, do you think that you will be
   - . . . better than all students. ☐
   - . . . better than most students. ☐
   - . . . about the same. ☐
   - . . . poorer than most students. ☐
   - . . . poorer than all students. ☐

4. Do you think you have the ability to complete a doctoral degree?
   - . . . Yes, for sure. ☐
   - . . . Yes, probably. ☐
   - . . . Maybe. ☐
   - . . . No, probably not. ☐
   - . . . No, for sure. ☐

5. Forget how your professors grade your work. How good do you think your work is?
   - . . . Excellent. ☐
   - . . . Good. ☐
   - . . . Same as most of the students. ☐
   - . . . Below most of the students. ☐
   - . . . Poor. ☐

6. How far do **you** believe you will go in university?
   - . . . Less than a bachelor's degree. ☐
   - . . . A bachelor's degree. ☐
   - . . . A second bachelor's degree. ☐
   - . . . A master's degree. ☐
   - . . . A doctoral degree. ☐

7. How far do you think **your parents** believe you will go in university?
   - . . . Less than a bachelor's degree. ☐
   - . . . A bachelor's degree. ☐
   - . . . A second bachelor's degree. ☐
   - . . . A master's degree. ☐
   - . . . A doctoral degree. ☐

8. How far do you think **your peers** believe you will go in university?
   - . . . Less than a bachelor's degree. ☐
   - . . . A bachelor's degree. ☐
   - . . . A second bachelor's degree. ☐
   - . . . A master's degree. ☐
   - . . . A doctoral degree. ☐

9. How far do you think **your most significant other** believes you will go in university?
   - . . . Less than a bachelor's degree. ☐
   - . . . A bachelor's degree. ☐
   - . . . A second bachelor's degree. ☐
   - . . . A master's degree. ☐
   - . . . A doctoral degree. ☐

10. Most people's ideas about their abilities are influenced by parents, peers, and significant others. How influential have each of these groups been to you? Using a scale from 1 to 10 (where 1 = low influence and 10 = high influence), rate the influence of each of these groups:

    Parents ____ Peers ____ Most Significant Other ____

Section 4

The ways in which you spend your time as a student, employee, parent, or family member may affect the quality of your educational experience. Please answer each of the following questions about how you use your time.

1. In how many credit hours of course work are you enrolled **this term**? _____ credit hours
2. On average, for this term, how many hours per week do you spend in paid employment?
   _____ hours per week
3. Time you spend **studying** may involve preparing assignments, reading, reviewing notes, discussing content with professors, and other activities. On average, for this term, how many hours per week do you spend studying?
   _____ hours per week
4. Are you married or living with someone in a similar type of commited relationship?
   Yes ☐ No ☐
5. Are you responsible for one or more **dependent** family members?
   Yes ☐ No ☐
6. For how many dependents are you responsible? _____

The ways in which you manage your time may also affect the quality of your educational experience. Please answer each of the following questions about how you manage your time. **Check one box for each question.**

		Always	Frequently	Sometimes	Infrequently	Never
7.	Do you make a list of the things you have to do each day?	☐	☐	☐	☐	☐
8.	Do you continue unprofitable routines or activities?	☐	☐	☐	☐	☐
9.	Do you plan your day before you start it?	☐	☐	☐	☐	☐
10.	Do you make constructive use of your time?	☐	☐	☐	☐	☐
11.	Do you make a schedule of the activities you have to do on work days?	☐	☐	☐	☐	☐
12.	Do you believe that there is room for improvement in the way you manage your time?	☐	☐	☐	☐	☐
13.	Do you write a set of goals for yourself each day?	☐	☐	☐	☐	☐
14.	On an average class day, do you spend more time with personal grooming than doing school work?	☐	☐	☐	☐	☐
15.	Do you spend time each day planning?	☐	☐	☐	☐	☐
16.	Do you feel you are in charge of your own time, by and large?	☐	☐	☐	☐	☐
17.	Do you have a clear idea of what you want to accomplish during the next week?	☐	☐	☐	☐	☐
18.	Do you often find yourself doing things which interfere with your school work simply because you hate to say "NO" to people?	☐	☐	☐	☐	☐
19.	Do you set and honour priorities?	☐	☐	☐	☐	☐

PART IV

In this part of the questionnaire, we ask for some factual information about your social background. Your answers to all of the questions are confidential and the names of individual students will not be identified in our research reports. We need this information in order to make statistical comparisons between students with different backgrounds.

1. What gender are you? Male ☐ Female ☐

2. How old are you? _____

3. What is your ethnic origin?

. . . English	☐	. . . Polish	☐
. . . French	☐	. . . Scandanavian	☐
. . . German	☐	. . . Ukrainian	☐
. . . Native Indian	☐	. . . Other	☐

If *Other*, please state your ethnic origin _____

4. What was the highest level of education that your parents received? **Check one box for each parent.**

	Mother	Father
. . . Elementary school	☐	☐
. . . Some high school	☐	☐
. . . Completed high school	☐	☐
. . . Some technical, vocational training	☐	☐
. . . Completed community college	☐	☐
. . . Some university	☐	☐
. . . Completed a Bachelor's degree (e.g., B.Ed., B.A.)	☐	☐
. . . Some education at the graduate level	☐	☐
. . . Completed graduate degree (e.g., M.Ed., Ph.D.)	☐	☐

5. What are your parents' occupations? (If they are retired or deceased, please indicate the occupations they held.) **Check one box for each parent.**

	Mother	Father
Self-employed professional (e.g., architect, dentist, engineer, M.D.)	☐	☐
Employed professional (e.g., accountant, school teacher, university teacher)	☐	☐
High level manager (e.g., president, vice-president, financial manager)	☐	☐
Semi-professional (e.g., cameraman, musician, photographer)	☐	☐
Technician (e.g., engineering technologist, life sciences technician)	☐	☐
Middle manager in business or government	☐	☐
Supervisor	☐	☐
Skilled clerical, sales, and service (e.g., insurance agent, salesperson)	☐	☐
Skilled crafts and trades (e.g., cabinet maker, painter, plumber)	☐	☐
Farmer	☐	☐
Semi-skilled clerical, sales, and service (e.g., office clerk, library file clerk)	☐	☐
Semi-skilled manual (e.g., bus driver, cook, taxi driver)	☐	☐
Unskilled clerical, sales, and service (e.g., mail carrier, nursing aide, orderly)	☐	☐
Unskilled manual (e.g., chambermaid, elevator operator, janitor)	☐	☐
Farm labourer	☐	☐
Other	☐	☐

Please describe _____

PART V

In this part of the questionnaire, we ask for some factual information about your university education. We need this information in order to make statistical comparisons between students in different programs.

1. Do you have an undergraduate university degree? Yes ☐ No ☐

2. Are you a visiting student from the University of Winnipeg? Yes ☐ No ☐

3. How many years of university education have you completed? (If you have been a part-time student, then estimate the number of equivalent full-time years.) _____ years

4. How many credit hours of university work are you taking this academic year (Sept. - April)? _____

5. From which undergraduate Faculty of Education program do you intend to graduate? **Check one box.**

   I have not made a decision yet ☐
   An Elementary Program ☐
   A Secondary Program ☐
   None ☐

6. What is your cumulative grade point average? **Check one box.**

   . . . 4.0 - 4.5 ☐ . . . 2.5 - 2.9 ☐ . . . 1.0 - 1.4 ☐
   . . . 3.5 - 3.9 ☐ . . . 2.0 - 2.4 ☐ . . . 0.0 - 0.9 ☐
   . . . 3.0 - 3.4 ☐ . . . 1.5 - 1.9 ☐

7. What are you most likely to be doing within six months of completing your B.Ed. degree? **Check one or more boxes.**

   . . . I don't expect to complete a B.Ed. ☐ . . . Further education ☐
   . . . Teach ☐ . . . Stay at home ☐
   . . . Work at another job ☐ . . . Other ☐
   . . . Travel ☐

PART VI

If you would like to receive a short report of this study, please provide your name and **permanent** address. **Please print.**

Name: _____
Last name First name

Address:

_____
Street & Number City or Town

_____ Postal Code _____
Province

Phone number: (___)_____
(Area Code)

We may wish to contact you in the future to see what you are doing. If you are willing to take part in future studies, please check the box. Yes ☐

PART VII

Thank you very much. We really appreciate the time and effort you have given in answering our questions.
If you have any comments or suggestions, please take a few minutes to jot them down.

If you have more comments, please note them on the back of this page.

Appendix B:

Quality of Life in the Faculty of Education Questionnaire (1987)

The University of Manitoba

QUALITY OF LIFE IN THE FACULTY OF EDUCATION

This questionnaire is about your life in, and your attitudes towards, the Faculty of Education. There are no right or wrong answers -- we are just trying to find out how students feel about their experience in the Faculty.

PART I

Different people have different ideas about the overall quality of education received in the Faculty of Education. Listed below are some things that students and professors have said are important. Please remember that we are interested in your honest and frank opinions.

Assess each statement by checking the response which best describes your experiences. Please remember that the phrase "**In the Faculty of Education I have learned..**" applies to each item. That is, we want you to respond in terms of your experience in the Faculty of Education.

(check one line for each statement)

IN THE FACULTY OF EDUCATION I HAVE LEARNED...	Definitely Agree	Mostly Agree	Neutral	Mostly Disagree	Definitely Disagree
.. a considerable amount about the subjects I plan to teach	____	____	____	____	____
.. to communicate clearly the subject matter I plan to teach	____	____	____	____	____
.. to evaluate the social-emotional performance of students	____	____	____	____	____
.. to analyze the theoretical perspectives of education	____	____	____	____	____
.. to synthesize various perspectives in the subjects I plan to teach	____	____	____	____	____
.. a considerable amount about the social-emotional development of children	____	____	____	____	____
.. to evaluate theoretical perspectives in education	____	____	____	____	____
.. to value myself as a prospective teacher	____	____	____	____	____
.. a considerable amount about the methodology of teaching	____	____	____	____	____
.. the professional responsibilities of teachers	____	____	____	____	____
.. a considerable amount about the psychological development of children	____	____	____	____	____
.. to write in a precise manner	____	____	____	____	____
.. to present lessons in a systematic manner	____	____	____	____	____
.. to assess teaching as a profession	____	____	____	____	____
.. to combine the elements of knowledge into new perspectives	____	____	____	____	____
.. to evaluate the subject areas I plan to teach	____	____	____	____	____
.. to value the research in education	____	____	____	____	____
.. to speak in a clear and concise manner	____	____	____	____	____

	(check one line for each statement)				
	Definitely Agree	Mostly Agree	Neutral	Mostly Disagree	Definitely Disagree
IN THE FACULTY OF EDUCATION I HAVE LEARNED...					
.. to value the things I have learned about classroom discipline	____	____	____	____	____
.. to plan appropriate learning activities	____	____	____	____	____
.. to evaluate the academic performance of students	____	____	____	____	____
.. to use a variety of teaching strategies	____	____	____	____	____
.. to examine my own teaching critically	____	____	____	____	____
.. to combine information from a number of sources	____	____	____	____	____
.. to value the teaching skills I have learned	____	____	____	____	____
.. to use a variety of ways to maintain classroom discipline	____	____	____	____	____
.. to analyze teaching in terms of various models of teaching	____	____	____	____	____
.. to combine various teaching techniques	____	____	____	____	____
.. to evaluate theories of classroom management	____	____	____	____	____
.. to value the Faculty of Education	____	____	____	____	____
Finally, please respond to a general question:					
.. Overall, I am satisfied with my program in the Faculty of Education	____	____	____	____	____

PART III

Each item below says that **The Faculty of Education is a place** where some particular thing happens to you or you feel a particular way. We would like you to respond to each statement by checking one of the response categories provided. Please remember that we are interested in your honest and frank opinions.

Please read each item carefully and check the answer which best describes how you feel. Please remember that the phrase **"The Faculty of Education is a Place Where..."** applies to each item.

	(check one line for each statement)				
	Definitely Agree	Mostly Agree	Neutral	Mostly Disagree	Definitely Disagree
THE FACULTY OF EDUCATION IS A PLACE WHERE...					
.. I feel proud to be a student	____	____	____	____	____
.. the things I learn are important to me	____	____	____	____	____
.. people look up to me	____	____	____	____	____
.. professors treat me fairly	____	____	____	____	____
.. I feel depressed	____	____	____	____	____
.. I find it easy to get to know other people	____	____	____	____	____
.. I really get involved in my work	____	____	____	____	____

(check one line for each statement)

THE FACULTY OF EDUCATION IS A PLACE WHERE...	Definitely Agree	Mostly Agree	Neutral	Mostly Disagree	Definitely Disagree
.. I like learning	___	___	___	___	___
.. I enjoy being	___	___	___	___	___
.. students are very friendly	___	___	___	___	___
.. I feel restless	___	___	___	___	___
.. professors give me the marks I deserve	___	___	___	___	___
.. I have acquired skills that will be of use to me	___	___	___	___	___
.. I achieve a satisfactory standard in my work	___	___	___	___	___
.. people care about what I think	___	___	___	___	___
.. professors take a personal interest in helping me with my work	___	___	___	___	___
.. I am treated with respect	___	___	___	___	___
.. mixing with other people helps me to understand myself	___	___	___	___	___
.. I feel lonely	___	___	___	___	___
.. the things I learn will help me in my life	___	___	___	___	___
.. people think a lot of me	___	___	___	___	___
.. I know how to cope with work	___	___	___	___	___
.. professors help me to do my best	___	___	___	___	___
.. I get upset	___	___	___	___	___
.. I am given the chance to do work that really interests me	___	___	___	___	___
.. I know I can do well enough to be successful	___	___	___	___	___
.. the things I am taught are worthwhile learning	___	___	___	___	___
.. I feel important	___	___	___	___	___
.. professors are fair and just	___	___	___	___	___
.. I am a success as a student	___	___	___	___	___
.. I really like to go each day	___	___	___	___	___
.. I learn to get along with other people	___	___	___	___	___
.. I feel worried	___	___	___	___	___
.. the work I do is good preparation for my future	___	___	___	___	___
.. I feel proud of myself	___	___	___	___	___
.. other students accept me as I am	___	___	___	___	___
.. I have learned to work hard	___	___	___	___	___
.. I get on well with the other students in my class	___	___	___	___	___
.. I find that learning is a lot of fun	___	___	___	___	___
.. professors listen to what I say	___	___	___	___	___

PART III

In this part of the questionnaire we ask for some factual information about yourself. All of your answers to all of the questions are confidential, and the names of individual students will not be identified in our research report. We need this information in order to make statistical comparisons between the types of students in different programs.

1. Do you have an undergraduate university degree? ...Yes____ ...No____

2. Are you studying for an education degree following the completion of another degree? ...Yes____ ...No____

3. How many credit hours of university work are you taking this academic year (Sept. - April) ? _____

4. Are you an undergraduate education student? ...Yes____ ...No____ (If no, go to question 5)

(a) What undergraduate program are you enrolled in?

(Check one line)

.. I have not made a decision yet ____

.. B.Ed.--Elementary ____ → If you are studying elementary education, what stream are you in? (Check one line)

.. B.Ed.--Secondary ____

.. B.Ed./B.Music ____

.. B.Ed./B.Hc. ____

.. U Of M/Red River College program ____

.. Winnipeg Educational Center ____

.. Other ____

.. Early childhood ____

.. Faculty-based program ____

.. School-based program ____

Please describe_____

(b) What are you most likely to be doing within six months of completing your B.Ed. degree? (check one or more lines)

.. I don't expect to complete a B.Ed. ____

.. Teach ____

.. Work at another job ____

.. Travel ____

.. Further education ____

.. Staying at home ____

.. Other things ____

Please describe _____

5. Are you taking education courses as options for other university programs? ...Yes____ ...No____

6. Are you a visiting student from the University of Winnipeg? ...Yes____ ...No____

7. Are you a graduate student in the Faculty of Education? ...Yes____ ...No____ (If no, go to question 8)

(a) What level of graduate program are you at?

.. Pre-Masters ____

.. Master's ____

.. Ph.D. ____

.. Other ____

Please describe_____

(b) What department are you registered in?

.. Educational Administration & Foundations ____

.. Educational Psychology ____

.. Curriculum: Humanities & Social Sciences ____

.. Curriculum: Mathematics & Natural Sciences ____

.. Other ____

Please describe_____

(c) What are you most likely to be doing within six months of completing your graduate degree? (Check one or more)

.. I don't expect to complete a graduate degree	_____	.. Further education	_____
.. Teach	_____	.. Staying at home	_____
.. Work at another job	_____	.. Other things	_____
.. Travel	_____	Please describe	_____

8. 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._____

9. Have you ever been employed as a teacher? ...No_____ ...Yes_____ If yes, how many years?_____

10. How good are you at your university work compared to other students in your year level?

.. A lot above average _____

.. A little above average_____

.. About average _____

.. A little below average_____

.. A lot below average_____

11. What is your grade point average?

..4.0--4.5_____ ..2.5--2.9_____ ..1.0--1.4_____

..3.5--3.9_____ ..2.0--2.4_____ ..0.0--0.9_____

..3.0--3.4_____ ..1.5--1.9_____

12. What is the highest level of education you expect to complete?

.. Less than a bachelor's degree_____ .. Pre-masters_____

.. A bachelor's degree_____ .. A master's degree_____

.. A second bachelor's degree_____ .. A doctorate degree_____

13. How much time do you spend on each of the following activities during a typical week? (estimate the number of hours)

.. Attending classes _____

.. Studying _____

.. Student teaching and/or voluntary time in schools _____

.. Paid employment _____

14. Please check how motivated you are to do well in your courses this year.

Unmotivated _____ _____ _____ _____ _____ Very motivated

15. What sex are you? ...Male_____ ...Female_____

16. How old are you? _____

17. What is your ethnic origin?

.. English_____ .. Polish_____

.. French_____ .. Scandanavian_____

.. German_____ .. Ukrainian_____

.. Native Indian_____ .. Other_____ If *Other*, please state your ethnic origin_____

18. What was the highest level of education that your parents received? (Check one line for each parent)

	Father	Mother
.. Elementary school	_____	_____
.. Some high school	_____	_____
.. Completed high school	_____	_____
.. Some technical, vocational training	_____	_____
.. Completed community college	_____	_____
.. Some university	_____	_____
.. Completed a Bachelor's degree (e.g., B.Ed., B.A.)	_____	_____
.. Some education at the graduate level	_____	_____
.. Completed graduate degree (e.g., M.Ed., Ph.D)	_____	_____

19. What are your parents' occupations? (If they are retired or deceased, please indicate the occupations they held.)

	(check one line for each parent) Mother	Father
.. Self-employed professionals (e.g., Architect, Dentist, Engineer, M.D.)	_____	_____
.. Employed professionals (e.g., Accountant, School Teacher, University Teacher)	_____	_____
.. High level managers (e.g., President, Vice-President, Financial Manager)	_____	_____
.. Semi-professionals (e.g., cameraman, musician, photographer)	_____	_____
.. Technicians (e.g., Engineering technologist, Life sciences technician)	_____	_____
.. Middle managers in business or government	_____	_____
.. Supervisors, Foremen and women	_____	_____
.. Skilled clerical, sales, and service (e.g., insurance agent, salesman)	_____	_____
.. Skilled crafts and trades (e.g., cabinet maker, painter, plumber)	_____	_____
.. Farmers	_____	_____
.. Semi-skilled clerical, sales, and service (e.g., office clerk, library file clerk)	_____	_____
.. Semi-skilled manual (e.g., bus driver, cook, taxi driver)	_____	_____
.. Unskilled clerical, sales, and service (e.g., mail carrier, nursing aide, orderly)	_____	_____
.. Unskilled manual (e.g., chambermaid, elevator operator, janitor)	_____	_____
.. Farm labourers	_____	_____
.. Other	_____	_____

Please describe_____

SOCIAL IDENTITIES

In the following instrument, you are asked to tell about your "social identities." Identities are labels that people can use to describe themselves. For example, some people identify themselves as skiers; others identify themselves as roommates.

Below are listed seven identity categories and a brief definition of each one. Also, for each category several examples of possible identities are given. Please read these category definitions carefully and look at the examples that illustrate the kinds of identities contained in each category.

IDENTITY CATEGORIES

CATEGORY	DEFINITION
Kinship:	labels that describe your relationship to family members (e.g., parent, sister, cousin)
Peer:	labels which describe acquaintances you have with people your own age (e.g., pal, friend, roommate)
Associational:	labels for membership in those clubs, groups, and organizations in which you formally or informally participate (e.g., president, member, treasurer)
Teaching Profession:	labels that describe your relationship to the teaching profession (e.g., student, teacher, vice-principal)
Religious/spiritual:	labels that describe your religious or spiritual orientation (e.g., Catholic, atheist, Hindu)
Romantic:	labels that describe close, affectionate relationships in which you are romantically involved (e.g., lover, spouse, girlfriend)
Recreational:	labels that describe what you do during your leisure time (e.g., guitarist, skier, knitter)

INSTRUCTIONS:

1. Think about the identities you have in each of these 7 categories. Ask yourself: "How important is each identity in my life from week to week?" After you have thought about their importance for a minute, go on to the next page.

2. For any particular person, some of these identity categories are more important than others. Now that you have thought about the place of each identity in your life, rank the identity categories in the order of their importance to you.

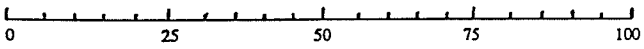
For your convenience, the 7 categories have been listed below. Write the identity category that is most important to you in the first blank ("1"); then, write the second most important category in the next blank, and so on, putting the least important one in the last blank ("7"). Be sure to use all 7 categories.

	Kinship Peer Associational Teaching Profession Religious/Spiritual Romantic Recreational	Rating
Most Important	1. _____	____
	2. _____	____
	3. _____	____
	4. _____	____
	5. _____	____
	6. _____	____
Least Important	7. _____	____

3. Now, go back and look at the way you rank ordered the identity categories. Ask yourself the question: "If, for some reason, I had to give up my identity in one of these categories, would I do so in the order listed here? That is, would I give up the one at the bottom first, then the next one, and so on up the line giving up last the one at the top of the list?" If not, change the order of the identity categories so that it is correct.

4. Finally, next to each identity category you completed above, rate its importance to you using the scale below. The numbers on the scale should be treated like the numbers on a ruler, with equal distances separating them. You may assign the same number to two or more consecutive identities, and you may use any number from 0 to 100.

Of no importance to me	Slightly important	Moderately important	Quite important	As important to me as I can imagine



TEACHER IDENTITY

INSTRUCTIONS:

The following statements concern your personal feelings and thoughts about being a teacher. For each of the items read the statement through carefully since no two are exactly alike. If a statement is TRUE or MOSTLY TRUE as applied to you, circle the T in front of the statement. If a statement is FALSE or MOSTLY FALSE as applied to you, circle the F in front of the statement.

MOSTLY TRUE	MOSTLY FALSE	
T	F	1. When people are discussing the topic of teaching, I probably will listen and/or join the conversation.
T	F	2. If I come across an article related to teaching, I probably will read it with interest.
T	F	3. If problems develop in my life, I try to think them through as they affect my teaching ability.
T	F	4. With respect to teaching, I don't care if I make mistakes.
T	F	5. During the past week, I have had no conversations about teaching.
T	F	6. During the past week, I have made 10 or more decisions in which my interest in teaching has influenced the decision process.
T	F	7. I rarely or never think about how I can be a better teacher.
T	F	8. Compared to other concerns, I worry little about how good a teacher I am.
T	F	9. If I had to give up something, being a teacher is the last thing I would give up.
T	F	10. When I am involved in activities related to teaching, I usually feel indifferent.
T	F	11. If I was a better teacher than everyone else, it would make little difference to me.
T	F	12. When I can, I seek out situations in which I can express myself as a teacher.
T	F	13. Being a teacher is not important to me.
T	F	14. I feel bad when I think I am not being a good teacher.
T	F	15. I rarely devote much time to my teaching interests.
T	F	16. When I meet new people, it is important to me that they know I am a teacher.
T	F	17. I typically organize my day so that I can work toward goals that are related to my teaching.
T	F	18. Being a teacher is of little value to me.
T	F	19. Being a teacher has virtually no effect on my life.
T	F	20. I enjoy it when people encourage me to be a teacher.
T	F	21. I would feel a great sense of loss if suddenly I were unable to be a teacher.
T	F	22. I am strongly committed to being a good teacher.
T	F	23. If people could know only one thing about me, I would want them to know I am a teacher.

PART IV

THANK YOU VERY MUCH. WE REALLY APPRECIATE THE TIME AND EFFORT YOU HAVE GIVEN IN ANSWERING OUR QUESTIONS.

IF YOU HAVE ANY COMMENTS OR SUGGESTIONS, PLEASE TAKE A FEW MINUTES TO JOT THEM DOWN.

PART V

Finally, we would like to send you a short report of this study, and we also would like to contact you in the future to see what you are doing. To enable us to contact you, we would like to have your name, address, and an address where we could contact you next year, or the year after.

Name_____
Last name (please print) First name

Address

_____
(Street & Number) (City or Town) (Province)

_____Postal Code_____

Phone number ( )_____
(Area Code)

Address at which we can contact you in the future:

Name_____
Last name First name

Address:_____
(Street & Number) (City or Town) (Province)

_____Postal Code_____

Phone number ( )_____
(Area Code)