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**The Quality and Nature of the Supervisory Relationship in Graduate Education:
Student and Supervisor Perceptions**

by

Maureen T. B. Drysdale

A DISSERTATION

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ABSTRACT

Increasing concerns in graduate schools about the quality of graduate programs, completion rates and their subsequent effect on the supply of new scholars (Holdaway, Deblois & Winchester, 1995) have led researchers to examine the quality and nature of the supervisory relationship (Hill, Acker & Black, 1994).

The purpose of this study was to identify the most important characteristics relevant to the perception of effective supervision in graduate education, and to examine the perception of satisfaction and impact with the characteristics among students and supervisors. The most important characteristics were identified by PhD students and experienced supervisors by way of structured interviews and a questionnaire and used to design parallel forms of the *Graduate Supervisory Relationship Scale*, which was then used to examine satisfaction with and impact of those characteristics.

Surveys were completed by 121 graduate students and 43 of their supervisors. Results revealed that a successful supervisory relationship was thought to be based on structure, expertise, belief in the student's ability, role modeling, and student attitudes. Both students and supervisors perceived the academic nature as being more important than the personal nature of the relationship.

Supervisors reported greater satisfaction with the supervisory relationship than did students. Student satisfaction with the supervisory relationship was positively correlated with their satisfaction with graduate education. A linear regression analysis of the characteristics revealed that the supervisor's schedule, belief in the student's ability and feedback on the thesis/dissertation accounted for unique variance in predicting overall student satisfaction. Female supervisors were more satisfied with student

schedules, motivation and attitude than were male supervisors. Male students were more satisfied than females with supervisor knowledge of the research topic. Students over 50 were more satisfied with supervisor availability. In terms of discipline, students in Nursing and Medical Science were the most satisfied with overall supervision, while students in Communication/Culture, and Science were the least satisfied. A significant relationship was found between overall satisfaction with the supervisory relationship and role modeling. Findings did not indicate that the decision to pursue an academic career or completion rate was influenced by the supervisory relationship. Conclusions and recommendations are made for how this data might improve graduate student supervision.

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DEDICATION

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CHAPTER ONE

INTRODUCTION

Theoretical Rationale

Many graduate students in North American universities do not complete their degrees for a variety of reasons. Incompletion rates in doctoral programs alone have been reported as high as 50% in the United States (Hunt, 1994; McAlpine & Weiss, 2000) and 43% in Canada (Canadian Association for Graduate Studies, 1996). In addition to poor completion rates, there are declining enrolment rates at many universities. Between 1997 and 1998, graduate student enrolment decreased by 6.4 % in Alberta universities alone (Statistics Canada, October 1998). Economic change is partly to blame for the decline in enrolment. Institutions of Higher Education are showing the strain of downsizing, underfunding and a decline in graduate student and faculty compensation (Lovitts & Nelson, 2000) all of which impact a university's overall reputation and quality of graduate education. This has an impact on enrolment as students tend to be drawn to a particular program based on both the university's reputation (Lovitts & Nelson, 2000) and the quality of graduate education (Holdaway, 1996). Subsequently, this leaves universities facing two challenges: first, attracting graduate students to their programs and second ensuring they complete their degrees successfully.

Why the concern about enrolment and completion rates? Recent studies of higher education have found that university administrators and faculty members are concerned for two reasons. First, graduate students increase research productivity at a university and research productivity influences the university's overall reputation and placement in

the hierarchy (Milem, Berger & Dey, 2000). Second, concern exists for the future supply of new scholars/teachers in academia (Hill, Acker, & Black, 1994). In Canadian universities, close to 50% of full-time university faculty and about 40% of college staff will be eligible for retirement in the next 10 years (Statistics Canada, February 2000). Specifically then, in addition to program quality, the concern is whether there are sufficient graduate students enrolled in and completing graduate degrees to become the professoriate of tomorrow.

Although several factors can impact program quality and completion, one that is becoming more prevalent in the research is the quality and nature of the relationship between supervisor and graduate student (Hill, Acker & Black, 1994; Moses, 1992; Powles, 1988). Studies by Powles (1988), Moses (1984), Willcoxson (1994) and Burnett (1999) indicate that successful completion is partly a function of the student's personality, motivation, family, and financial circumstances. However a major factor is the degree of satisfaction with the supervisory relationship. A recent study by Lovitts and Nelson (2000) supports this finding. They found that the single most important factor in student decisions to continue or withdraw from graduate school was their level of satisfaction with the supervision they received.

Given that the supervisory relationship plays such an important role in graduate education, it is imperative to have a clear understanding of what is meant by supervision.

Graduate Student Supervision

Conceptually, there is ambiguity over what characterizes the definition of graduate student supervision (Donald, Saroyan, & Denison, 1995). For some researchers, it is seen simply as a mechanically narrow process of ensuring that deadlines are

established and students complete the required tasks to graduate. For others, supervision is believed to be a more complex process, whereby students are not only guided through the mechanical details of the program but also helped in becoming members of the academic community (Donald, Saroyan, & Denison, 1995).

The supervisory relationship itself has received little attention in the literature on supervision (Kaiser, 1997). What has been examined however, shows that the nature of the relationship can have a profound influence on a student, impacting such things as quality of work (Kaiser, 1997), self-esteem (Hodgson & Simoni, 1995), and overall success (Donald, Saroyan, & Denison, 1995).

Many supervisory characteristics have been identified in the research on supervision. Moses (1992) found that the most challenging aspects of supervision included: the amount of help and guidance students should be given considering that their research should be original, how topic selection should fit with supervisors' interests, the frequency of meetings and length of meetings, finding a balance between different approaches to supervision, and understanding the nature of the personal relationship they had with their students.

In addition to some of the characteristics mentioned above, Hill, Acker, and Black (1994) found that students indicated approachability as an essential part of an effective relationship. Other researchers have identified supervisors' emphasis, role and focus on the topic as being important (McMichael, 1992). Eggleston and Delamont (1983) compiled a list of supervisor descriptors based on research from the literature and then asked graduate students to indicate which adjectives might describe the ideal supervisor.

Items in the list included: available, caring, critical, enthusiastic, helpful, influential, knowledgeable, respectful, specialist, teacher, and trainer.

With respect to student characteristics, McMichael (1992) found that supervisors preferred students who had the ability to organize and be effective with their time, who were independent workers, were committed to their work, and who treated their supervisor with respect.

In an attempt to understand student-supervisory relationships, researchers have focused not only on the characteristics and behaviors of students and supervisors but also on demographic variables such as age, gender, and Faculty or Department.

Age

Powles (1988) found that students under 30 were more dissatisfied than students over 30 in all aspects of guidance and supervision. With respect to age of supervisor, Yerushalmi (1993) wrote that as supervisors approach middle age, they might experience stagnation, depression, cynicism and pessimism, which can have a negative effect on supervision. Supervisors may feel threatened in the presence of younger students aspiring to replace them.

Gender

Gender issues have become increasingly important in the research on supervision. Women report more barriers to successful supervisory relationships than do men (Burke & McKeen, 1996). Male students perceived better relationships with their supervisors, regardless of the gender of the supervisor, than female students did. In addition, male supervisors also perceived better relationships with students, regardless of student gender, than did female supervisors (Worthington & Stern, 1985).

Faculty or Department

Research has indicated differences in supervisory practice across the various departments and Faculties in graduate education (Donald, Saroyan, & Denison, 1995; Moses, 1992). While most Faculties and departments agree on the need for knowledge of research area and availability for effective supervision, discrepancies occur in the area of providing feedback and being sensitive to student needs (Donald, Saroyan, & Denison, 1995; Moses, 1992; Powles, 1993). To date, research examining the differences in perceived supervisory effectiveness and the importance students place on the different characteristics of supervision have only been examined in Humanities (Hodgson & Simoni, 1995), Natural Sciences (Maor, & Fraser, 1995), Social Sciences (Burgess, Pole, & Hockey, 1994), Social Work (Collins, 1993) and Clinical/Counseling Psychology (Friedlander & Ward, 1984; Kaiser, 1992). There does not appear to be any research examining the differences in supervision and satisfaction with supervision across all Faculties in graduate school, especially in the area of Education, Engineering, Kinesiology, Nursing and Medical Science.

Although the studies mentioned above provide some understanding of the supervisory relationship in graduate education, it is clear that many interpretations exist, making it difficult to identify the most important characteristics of the supervisory relationship. Furthermore, it is difficult to know if the characteristics of the relationship vary depending on demographic and situational variables. The lack of such information makes it difficult for program administrators to ensure that effective supervision is occurring.

Considering the current concerns about the quality of graduate education and completion rates, it is essential that universities understand and promote effective supervisory practices within their graduate education programs. This requires an understanding of what constitutes effective supervision. Understanding both the nature of the supervisory relationship, and the roles and behaviors of both the supervisor and the student within the relationship are critical in attempting to find an operational definition of effective supervision. This in turn can have an impact on the quality of graduate education for all students.

Given the concerns mentioned above, and the importance of supervision in graduate education, it seems reasonable to investigate the relationship further.

Purpose of the Study

There are two purposes to the present study; first, to identify the most important characteristics relevant to the perception of effective supervision, and second, by using the most important characteristics, to examine the perception of satisfaction and experience with the characteristics in terms of demographic variables.

The first task will be to determine the most important characteristics of the student/supervisor relationship. Previous studies have identified numerous characteristics relevant to supervision, however no study has identified the salient issues specific to the relationship between graduate student and supervisor. If only the characteristics found to be relevant in previous studies on supervision were used, an assumption would be made that they are all equally important.

The second task will be to design a survey that captures the satisfaction with and impact of the most important characteristics on the supervisory relationship, the students' studies and final degree outcome. In addition, the survey will capture demographic information on both students and supervisors (e.g. age, gender, Faculty), situational information (perceptions within individual student/supervisor dyads), and overall satisfaction with the supervisory experience.

The third task will be to administer the survey to students and their supervisors to examine the quality and nature of the supervisory relationship in graduate education. Perceptions of effective and ineffective supervision will emerge from this study and contribute to our understanding of the nature of the supervisory relationship, which is expected to have an impact on successful outcomes in graduate school.

Significance of the Study

This study examining the quality and nature of the supervisory relationship in graduate education contributes to knowledge in five ways. First, it is a step towards finding an operational definition of effective supervision in graduate education, which does not currently exist.

Second, current research on student-supervisor relationships has predominantly focused on either counseling psychology, psychotherapy or field practicums (Friedlander & Ward, 1984; Kaiser, 1992; Muszynski & Akamatsu, 1991). The roles of the supervisors and students in these areas differ from research supervision in that they involve interactions with clients and patients. The literature therefore on counseling and field supervision is not applicable to research supervision in all areas of graduate

education. There is currently a paucity of research examining the complex relationship across various Faculties and departments within graduate education. This study will provide an understanding of the similarities and differences of supervisory practices and the perception of effective supervision within and across all Faculties of graduate education.

Third, there do not appear to be any previous studies examining the nature of the relationship in graduate education by sampling students and supervisors in pairs. Researchers examining student perceptions alone have found that conflicting expectations and misunderstanding of student needs are significant factors in dissatisfaction and/or attrition experienced by students (McAlpine & Weiss, 2000). This study will examine perceptions within individual dyads, contributing to our knowledge of student needs, expectations, conflict and misunderstanding, within the relationship.

Fourth, this study contributes to our overall understanding of research supervision and graduate education in Canada. In recent years, numerous studies in Britain and Australia have examined the process of higher degree research supervision and the factors influencing completion rates. In Canada, however, very few studies have been conducted addressing these issues.

Finally, this study may provide the foundation for the development of instructional opportunities such as workshops and seminars to improve the quality of graduate education. Also, it is perhaps the first step in establishing a way of matching students with their supervisors based on individual needs and expectations.

Definition of Terms

Many terms used in higher education are not universally agreed upon. Terms such as supervisor, advisor and mentor are often used interchangeably yet have different meanings from one study to the next and from one university to the next. To avoid confusion and to clarify meaning, it was deemed necessary to specifically define several terms used in this study.

Discipline: The term discipline will be used to signify the students' area of study within a department or Faculty.

Faculty: The term Faculty will be used to signify a single division (e.g., Faculty of Nursing) or group of departments within the university (e.g. Departments of Psychology, Sociology, Political Science within the Faculty of Social Sciences).

Graduate Education: The term graduate education will be used to signify education beyond the undergraduate level involving the pursuit of either a masters or doctoral degree. Graduate programs focus primarily on research and scholarship and prepare students for careers as university teachers, full-time researchers, or professional practitioners such as counsellors, psychologists or engineers.

Graduate Student/Student/Supervisee: The titles of graduate student, student or supervisee will be used interchangeably to signify an individual who is registered in an approved graduate degree program within the Faculty of Graduate Studies.

Mentor: For the purposes of this study, the term mentor will not be used synonymously with supervisor. Although there may be overlapping characteristics (e.g., guide, teacher) and students may view their supervisors as mentors, the term in this study will signify an individual who guides the student in all aspects of their career above and beyond the supervision of their graduate studies. Clarification of the similarities and differences between mentor and supervisor will be discussed in greater detail in Chapter Two.

Supervision: In a general sense, supervision involves acting as a general academic tutor, and a judge of the student's performance. Supervision involves advising and guiding the student in pursuit of knowledge (Handbook of Supervision and Examination, University of Calgary, 1998). A more precise and specific definition of graduate student supervision will be determined from this study.

Supervisor: The title of supervisor will be used to signify a member of the academic community who has a continuing Board appointment with the university and has been approved by the Faculty of Graduate Studies to supervise graduate students. In very general terms, supervisors guide graduate students through their program of study, serve as evaluators in written and oral examinations, and direct dissertations and theses (Winston & Polkosnik, 1984). The term advisor is often used synonymously with supervisor, however in this study only supervisor will be used.

Supervisory Relationship and Student/Supervisor Relationship: The terms Student/Supervisor Relationship and Supervisory Relationship will be used interchangeably to signify the academic relationship between supervisor and graduate student.

Overview of Subsequent Chapters

This chapter sets the context and describes the rationale and purpose for the present study. Chapter Two is a summary of the relevant literature, beginning with a discussion of Higher Education and Graduate Education in general. The literature review then moves on to the role of supervision and the characteristics of the supervisory relationship. Chapter Two also presents a review of the research examining supervision in terms of demographic variables such as age and gender. A brief explanation of different measures of supervision is also presented. Chapter Two concludes with the list of research questions to be investigated in this study. Chapter Three describes the participants, the methodology, the survey instruments and the data collection procedures used to investigate the research questions. The results of the study are presented in Chapter Four. Chapter Five provides a discussion of the results and how they relate to the literature on supervision. In addition, Chapter Five presents a discussion of the limitations, recommendations and suggestions for future research.

CHAPTER TWO

LITERATURE REVIEW

This literature review begins with a description of higher education and then proceeds to describe the nature of graduate education, including the areas of concern for students, faculty and administrators. This leads into a discussion on supervision as it emerges as an area of concern. Supervision is described in general terms and in terms of the graduate student-supervisory relationship. The many characteristics found to be relevant in the relationship are then reviewed to increase understanding of the complex nature of the relationship. As part of clarifying the nature of the relationship, the literature review includes a section on the similarities and differences between supervision and mentoring. The next section of the chapter examines demographic variables that have been linked to the perception of effective supervision and overall satisfaction with graduate education. Following this, is a brief section on the measures and surveys that have been used in previous research to examine supervisory relationships, leading to the rationale for developing a new survey that could be used for all students and supervisors regardless of Faculty. Chapter Two concludes with a list of the research questions to be answered in this study.

The Nature of Higher Education

Our present traditions of university education can be traced back to ancient institutions such as those at Bologna, Oxford, and Paris. These centers of learning were referred to as "*studia generalia*" (Wilson, 1992). They were geographical locations

where students and teachers gathered for instruction in the various areas of their interest. The students and teachers formed themselves into "societies" which were referred to by the Latin name *universitas*, meaning corporation. This term has been adopted to describe the body of scholars and tutors, which has evolved into our present day *university*.

According to Auld (1996) a university has two primary purposes. The first is to educate people and the second is to conduct research. To educate people is to instill knowledge in those who attend, in other words, the students. To educate does not necessarily mean to teach, because students can acquire knowledge through reading, listening, and asking. Auld (1996) also asserts that research is not always carried out through experiments and questionnaires, but can be developed through the simple act of thinking.

At one time, universities were simple institutions without rigid timetables, classrooms and research assistants. They were comprised mostly of books and knowledgeable scholars available for advice. Universities today are not so simple. In addition to books, they have CD-ROMS, videos, large lecture halls, and rigid timetables. "They have evolved into multi-faceted, complex bureaucracies, in part driven by technology and, in part, mirroring other organizations in society" (Auld, 1996, pp. 15). Despite these changes, the university remains a place where people with inquisitive minds can pursue their thirst for knowledge. The university provides a path for those who ask the "why" and "how" questions. It is a place where people can become trained in areas such as educating others, diagnosing an illness, or building a bridge. The university remains a distinct society.

The teaching and learning that occurs within the university, is divided into two levels. The undergraduate level leading to a bachelor's degree and the graduate level leading to either a master's degree or a doctoral degree. The focus of this study is on teaching and learning at the graduate level.

The Nature of Graduate Education

Graduate education, an essential component of universities, refers to the central unit, which has responsibility for the overall administration of graduate programs. The graduate programs refer to master's and doctoral degrees often directed at one of two careers. The first is the preparation of future academics and researchers. The second is either professional qualifications or professional upgrading, mainly through course-work master's degrees (e.g., MEd, MBA, MSW or MLS) (Holdaway, Deblois, & Winchester, 1995).

The responsibility for graduate education is typically shared among a central body (Faculty of Graduate Studies), the Dean's office in individual Faculties (e.g. Social Science), and individual departments (e.g. Sociology). In Canada, these offices and Faculties of graduate studies work together to perform some or all of the following functions:

- a) Provide a central graduate presence and identity on campus;
- b) Develop a database about graduate students;
- c) Assemble a knowledgeable group of academics interested in graduate studies;
- d) Provide a central body to address the needs of graduate students;
- e) Ensure that proposed new graduate programs meet acceptable standards;

- f) **Communicate with graduate offices in other universities and with federal granting agencies; and**
- g) **Provide quality control over all aspects of graduate education by approving admissions, approving supervisors and supervisory committees, examining the format of theses, monitoring oral examinations and awarding degrees.**

(Holdaway, 1996).

Faculties of Graduate Studies are also responsible for defining what graduate education is and what it is not (Gordon, Baker, Croft, D'Arms, Dimminie, & Sheridan, 1990).

Generally speaking, graduate education is said to have three major characteristics. First, it is advanced, meaning that all students have prior post-secondary education where they have been exposed to new ideas, critical thinking, analytical processes, and communication skills. Second, it is focused on a discipline, a profession, a problem, or an issue. Finally, graduate education is scholarly, with an evolving knowledge base and the generation of new and original ideas and contributions. (LaPidus, 1989). With these characteristics, come two predominant goals. The first is to prepare people to practice as independent professionals, and the second is to produce research that is linked to the intellectual, social, and economic development of society (LaPidus, 1989). Keeping these important goals in mind, and the contribution and impact graduate programs can have on national economies (Holdaway, Deblois, & Winchester, 1995), procedures and practices within graduate education are constantly being examined to identify potential problem areas (Smith, 1991).

In recent years, problem areas that have been identified in graduate education relate to completion times, completion percentages, quality of students and quality of

programs (Holdaway, Deblois, & Winchester, 1994; Canadian Association for Graduate Studies, 1992; Royal Society of Canada, 1991; Smith, 1991). Such problem areas concern university administrators for two reasons. First, graduate students increase research productivity, which can lead to greater external funding. Increased productivity can also influence the overall reputation of the university (Milem, Berger & Dey, 2000) which in turn encourages further enrolment. If completion rates are low and the quality of a graduate program is poor, students are likely to choose an alternate institution.

The second concern is for the future supply of new scholars and teachers in academia (Hill, Acker, & Black, 1994). As previously mentioned in the introduction to this dissertation, Canadian universities will see nearly 50% of full-time faculty and about 40% of college faculty retiring in the next 10 years (Statistics Canada, February 2000). Again, if completion rates are low and attrition high, there may not be sufficient PhD graduates pursuing academic careers to replace those that are retiring.

Although there are several factors that can have a potential impact on completion rates (e.g. health, finances, family, motivation), reports have indicated that constant supportive supervision is a major key to successful graduate program completion (Holdaway, 1991; Holdaway, Deblois, & Winchester, 1994). Supervision, therefore, plays a critical role in achieving one of the goals of graduate education, which is to introduce and prepare students for a scholarly career (Katz, 1976; Powles, 1988). Given the importance of supervision in attaining the academic goal of graduate education, it seems reasonable to investigate it in greater detail.

The Role of Supervision

In terms of graduate education, research in the last ten years has focused primarily on the role of supervision (Holdaway, 1996; Seagram, Gould & Pyke, 1998; Magnuson, Wilcoxon & Norem, 2000; McAlpine & Weiss, 2000). This is not surprising given "the critical role of the supervisor in socializing graduate students into the academic community: enabling students to complete their theses and dissertations, and through this process come to understand how to conduct research and participate in the culture of the academic" (McAlpine & Weiss, 2000, p. 3).

In graduate schools, the supervision of graduate students is just one of many tasks university professors undertake. These tasks (including supervision) have often been grouped into one of three activities: research, service and teaching (Boyer, 1990). The supervision of the graduate student thesis or dissertation is one aspect of teaching. The role itself has been described as "the most complex and subtle form of teaching in which we engage" (Brown & Atkins, 1988, p. 115). Ironically, approval to supervise often depends heavily upon the record of the faculty member in research and publication and little upon teaching experience (Holdaway, 1996). Teaching and supervision are often peripheral to the reward systems of the institutions (Hill, Acker & Black, 1994) and too often are ignored at the expense of research and service. McAlpine and Weiss (2000) however, believe teaching, and specifically supervision, is worthy of attention.

Currently, there is much ambiguity over what characterizes the definition of graduate student supervision (Donald, Saroyan, & Denison, 1995). Across individual departments and Faculties, it is interpreted in a multitude of ways, however there are a few similar elements. For some researchers, it is seen simply as a mechanical process of

"setting deadlines to ensure that students complete learning and research tasks"

(Donald, Saroyan & Denison, 1995, p. 72). For others, supervision is believed to be a more complex process, and is defined as a "process of aiding the graduate student to become a member of a research team and by extension, a member of the discipline" (Donald, Saroyan, & Denison, 1995, p. 72).

In some human service fields, supervision is commonly seen as a primary avenue through which new practitioners learn the tools of the trade (Kaiser, 1997). In the area of social work, Kadushin (1992) describes supervision as consisting of supportive, educational and administrative functions, in addition to providing a discussion about the skills and tasks involved in each. In marriage and family therapy programs and in counseling psychology, supervision is seen as a means for teaching practitioners, with a focus on educational issues (Barnard & Goodyear, 1992), and ethical and legal issues (Goldberg, 1993; Kaiser, 1992). Unlike social work, there is less focus on the administrative aspects.

In general, the role of supervision in graduate schools is described as "the ability to select problems, to stimulate and enthuse students, and to provide a steady stream of ideas", in addition to "the mechanics of ensuring that the student makes steady progress" (Council of Graduate Schools, 1990, p.1).

Although there may be a generalized description of supervision within graduate education, the amount of emphasis placed on the different aspects of supervision varies across departments and Faculties. In a study examining the organization and administration of graduate programs across Canada, and the role of supervision within and across departments, Holdaway, Deblois, & Winchester (1995) found that supervisors

in Biology, Physical Sciences, and Health Sciences placed more emphasis than other departments on the preparation of journal manuscripts, hence encouraging publications. Supervisors in Biology also placed a high emphasis on motivating students. Supervisors in the Social Sciences, Humanities, and Education placed little emphasis on assisting with publications and motivation, however they did score high on the emphasis placed on learning research methodologies. In the faculty of Business Education, supervisors believed that matching personalities of supervisors and students was important, in addition to providing support and guidance on personal issues. Interestingly, Social Science supervisors placed the least emphasis of all Faculties on providing personal support.

Several aspects were viewed as important across all Faculties. These included: ensuring that students make continuous progress, providing prompt (not defined) feedback, and holding regular (also not defined) progress meetings. Based on the above findings, and the impact supervision has on satisfaction and quality, it would be beneficial to examine whether the emphasis placed on the various aspects of supervision has an effect on perceived supervisory effectiveness. This will be addressed in the present study.

The Supervisory Relationship

The relationship between a student and a supervisor is seen as the medium through which change and growth occurs. The supervisory relationship itself has received little attention in the literature on supervision (Kaiser, 1997). What has been examined however, shows that the nature of the relationship can have a profound influence on a

student, impacting such things as quality of work (Kaiser, 1997), self-esteem (Hodgson & Simoni, 1995), competence (Heppner & Roehlke, 1984), and overall success (Donald, Saroyan, & Denison, 1995). In fact, graduate students regard their relationship with their supervisor as the most important aspect of their graduate education (Benassi & Ferland, 1993; Aguinis, Nesler, Quigley, Lee, & Tedeschi, 1996).

Ballard and Clanchy (1993), describe the relationship as involving "a blend of academic expertise and the skillful management of personal and professional relations. Supervisors are expected to be knowledgeable and skilled in their disciplinary specialities, and they are also expected to take the lead in establishing a quality of relations which will give their students access to the knowledge and skills they possess." (p. 61). In this regard, it is similar to an apprenticeship, whereby there is a considerable degree of direction and teaching of the graduate student by the supervisor (Holdaway, Deblois, & Winchester, 1995).

Kaiser (1997), in describing the relationship, identified three core elements that exist between supervisor and student. These elements are power and authority, shared meaning, and trust. Power refers to the ability to influence or control another and authority refers to the right to exert this control (Kadushin, 1992). Supervisory relationships are characterized by a power differential because at some point, the supervisor will need to evaluate the quality of the students' work (Collins, 1993). The supervisor has authority similar to the role of teacher, hence, regardless of past experience, age, or position, the supervisee, as student, is placed in the role of learner (Rosenblum & Raphael, 1983). Kadushin (1992) explains how for some graduate students the power differential is difficult to accept. Graduate students' perceptions of the

power of supervisors are assumed to influence the relationship between themselves and overall educational outcomes such as: (a) graduate student's satisfaction with the graduate program and university environment, (b) students' mood and morale, (c) number of years spent to complete the graduate degree, and (d) future career success (Aguinis, Nesler, Quigley, Lee & Tedeschi, 1996). Despite the above, for effective supervision to occur, both the supervisor and the student need to fully participate in the process recognizing and accepting that a power differential does exist (Kaiser, 1997). In extreme situations, a student will refuse guidance as a means of removing themselves from the relationship and the power differential. However with this distancing comes the possibility that the supervisor will have a less than positive impact on the student's work and career (Kaiser, 1997).

The issue is in determining an appropriate power differential between student and supervisor. In other words, what is considered to be too much power and what is too little? How much should the student be encouraged to act autonomously and how much should the student depend on the supervisor for answers and guidance? Generally agreed upon answers to these questions are that good supervisory practice means that the supervisor is neither using power in a destructive way (Jacobs, 1991), nor failing to acknowledge its existence in the relationship (Kaiser, 1997). The supervisor, for example, will be in charge of setting the boundaries of the relationship and determining the parameters of acceptable behaviour.

The second element in the relationship is shared meaning about roles and tasks. This refers to the mutual understanding and agreement between a supervisor and a student (Kaiser, 1997). Shared meaning essentially means that if clear communication is

occurring then the message sent by one, is the message received by the other. A comment from a student in a supervisory relationship where this is not occurring might be 'my supervisor never understands me or my needs,' or 'I can never follow what my supervisor is saying.'

Trust, the third element identified by Kaiser, has been documented as important in achieving effective supervision (Heppner & Roehlke, 1984; Kadushin, 1992). Trust, includes safety, which is defined as the student's freedom to make mistakes and to take risks without the danger of an overly critical reaction from the supervisor (Kaiser, 1997). Safety is also important because the vulnerable student will be exposing personal and professional skills. Without the exposure of those skills, the supervisor will not be able to challenge the student and encourage growth. Teitelbaum (1998) also identified the student's need for safety as being paramount in the supervisory relationship. He explains that safety does not mean that the supervisor is limited to positive, supportive, and empathic feedback. Instead, if the student feels that his/her strengths are regularly acknowledged then the tendency to be defensive in the face of constructive criticism is limited.

In addition to power and authority, shared meaning, and trust, other elements of the relationship that have been identified as important are fairness (Eggleston & Delamont, 1983), and accountability (Kaiser, 1992). Each of the elements mentioned involve many supervisory characteristics and behaviors that affect the perception of effective supervision. These characteristics and behaviours will now be addressed.

Characteristics of the Supervisory Relationship

Many supervisory characteristics have been identified in the research on supervision. In fact, the number of variables that could potentially influence the supervisory process is very large, (Carifio & Hess, 1987). Moses (1984) examined aspects of the PhD programs coupled with student needs and demographics. In the study, supervisors were asked to indicate aspects of the supervisory process that they found to be challenging. Topics mentioned fell into five broad categories.

First, the amount of help and guidance that students should be given, considering that their research should be original, was a question that frequently came up. Supervisors were unsure about the amount of independence students should have with respect to topic selection and research design. In fact, some universities have a hands-off approach to supervision and prefer the term 'advisor' to 'supervisor', because it implies less direction and less involvement in the students research (Holdaway, Deblois, & Winchester, 1995). In other studies such as that by Magnuson, Wilcoxon and Norem (2000) a hands-off approach is reflective of 'lousy supervision'. In their study, participants emphasized the importance of accurate, specific, and abundant feedback as characteristic of effective supervision.

Second, how topic selection should fit with supervisors' interest was also an area of concern. Research has shown that some supervisors place more emphasis on matching research interest while others see personality matching as more important (Holdaway, Deblois & Winchester, 1995; Moses, 1984; Powles, 1988). Elton and Pope (1989) claim that matching of research interest and personality are equally important and necessary for collegiality, which in turn is necessary for effective supervision.

Third, the frequency and length of meetings was a major challenge because supervisors recognized that student needs varied. In his study, Moses (1984) reported that supervisors found it very difficult to define the term 'regular', for it was too subjective to define accurately. Seagram, Gould and Pyke (1998) found that a significant relationship existed between frequency of meetings and completion rates. Fast completers met more frequently than slow completers did. Although this result seems logical, it is not clear as to the meaning of 'met more frequently' because the researchers fail to explain this. It can only be assumed that it was number of meetings over the course of a student's entire program of studies. It is important to focus on the quality of meetings as well as the frequency of meetings. Magnuson, Wilcoxon and Norem (2000) found that frequency of meetings was irrelevant if the length, quality and focus were lacking. Essentially, if time was not used appropriately, then students were less satisfied with the supervisory experience.

The fourth challenge identified by Moses (1984) was finding a balance between different approaches to supervision, for example, sole versus joint supervision. Supervisors questioned whether joint supervision was beneficial to students. This concern has been supported by Powles (1988) who asked 160 jointly supervised students about their experience, and found that only 40% of the students found the supervision to be very satisfactory or satisfactory. The remaining 60% found this format of supervision to be either reasonable or unacceptable.

The fifth and final challenge mentioned by supervisors was the nature of the personal relationship they had with their students. They questioned to what extent they should be aware of personal and economic problems, and to what extent they should

include students in their professional network. Few studies of graduate student supervision have addressed these questions. Only recently are some answers available. For example, Lovitts and Nelson (2000) surveyed 816 students (511 completers and 305 noncompleters) and found that the type of support students receive, their degree of participation in the department's intellectual and social life and in the profession was related to their success at completing a graduate degree. Personal and academic support increased the probability of completion and surprisingly the more financial support students received, the less likely they were to complete their studies. It was reported that students on full fellowships were less likely to have daily contact with their supervisor, other graduate students and faculty. Lovitts and Nelson explained that fellowship students were often so disconnected with academic culture that they violated university regulations and secretly took outside jobs while receiving their fellowship cheques. Consequently, they slowly abandoned their studies. On the other hand, graduate students with teaching assistantships were more likely to complete their degrees. They reported being more involved in departmental activities and had more contact with their supervisors. These students also reported more satisfaction with supervision.

Powles (1988) conducted a study on the positive and negative aspects of graduate education with a particular focus on supervisory practices. Using a questionnaire, students were asked about their supervisory relationships. Problem areas identified included personality clashes, sexual harassment, professional disagreements, availability and frequency of face-to-face meetings, conflicts over authorship, plagiarism by the supervisor and inadequate encouragement and feedback. Some of these problems can be linked directly to the challenges faced by supervisors in the study by Moses (1984). For

example, availability and frequency of face-to-face meetings, as mentioned by students (Powles, 1988) and frequency and length of meetings, as mentioned by supervisors (Moses, 1984). In addition, when asked about what improvements students would like to see in the supervisory relationship, 21% said they wanted more opportunity for personal contact and 30% indicated they would like more guidance in all areas such as topic, research design, research methods, statistical analysis and writing. These suggestions for improvement also match the concerns found by Moses (1984).

In addition to some of the characteristics mentioned above, Hill, Acker, and Black, (1994) found that students indicated approachability as an essential part of an effective relationship. Students said they felt more confident in expressing themselves and their ideas when they had a friendly relationship with their supervisor. If supervisors are distant, students said they felt intimidated and reluctant to express their own ideas. Teitelbaum (1998) also stated that most students benefit from a supervisor who is empathetic, particularly in relation to the student's feelings of inadequacy or incompetence.

Other researchers have identified supervisors' emphasis, role and focus on the topic as being important (Carey & Ivey, 1988; Lanning, 1986). This may be related to what others have identified as expertise and interest in topic of research (Elton & Pope, 1989; McMichael, 1992).

Eggleston and Delamont (1983) compiled a list of supervisor descriptors based on research from the literature and then asked graduate students to indicate which adjectives might describe the ideal supervisor. Items in the list included the following: active, attentive, available, caring, critical, colleague, co-ordinator, detached, director,

enthusiastic, friend, helpful, influential, involved, knowledgeable, objective, passive, partner, respectful, specialist, stimulating, teacher, and trainer. Four of the items were not chosen by any of the participants. These were detached, director, passive, and partner. The four items receiving top ratings were knowledgeable, available, helpful, and stimulating, with knowledgeable being chosen the most frequently. Knowledgeable has often been listed as a characteristic of effective supervisors (Burgess, Pole, & Hockey, 1994; McMichael, 1992). Kaiser (1997) found that students tend to be more satisfied with the relationship when they perceive their supervisors as being knowledgeable. The following case reflects this well:

A student described her supervisor as not being very bright or knowledgeable and stated that she didn't believe he had much to give her. Like others in this situation, she did not talk to him much about what was happening in her work. She met with him for the required hour a week and told him in a perfunctory manner what she was doing. She expressed no doubts, questions, or concerns and asked for little to no help in her work. He would compliment her on a job well done and she would leave, feeling unsatisfied (Kaiser, 1997, p. 29).

When the knowledge differential does not appear to be present, the validity of the supervisor's feedback is questioned, resulting in students not asking for feedback, such as in the above example (Schwartz, 1988). If examined in a satisfaction type survey, the outcome for this type of relationship would be that the student might indicate poor supervision while the supervisor indicates a satisfactory relationship. By examining the

importance placed on particular behaviors, and the perceived satisfaction with those behaviors, it is possible to identify the cause for the discrepancy in satisfaction ratings.

Fraser and Mathews (1999) report evidence from a survey of postgraduate students regarding desirable characteristics of a supervisor, which supports the view that some students desire much more from a supervisor than knowledge in the subject matter. What they found was that the success of the relationship depended on three supervisor characteristics of which one was expertise in the research area, the second was support for the student and the third was balancing creativity and criticism; in other words advice and flexibility with constructive criticism.

A final yet major characteristic of the supervisory relationship often found in the research is that supervisors of graduate degrees are also or should be mentors to their students. This particular area of research receives much attention and debate, for some researchers believe that supervision and mentoring are distinct functions while others believe they are one and the same. In some cases, the terms are used interchangeably. For the purpose of this study, a review of the literature on mentoring and supervision is provided to address the similarities and differences between the two.

Mentoring and Supervision

Mentoring, a specific type of relationship has become an increasingly popular topic within the student-supervisor relationship. In fact, it is currently considered by some to be critical for preparing graduate students for academic careers (Morgan, 1993). The question is whether the supervisory relationship is in fact a mentoring relationship.

The word mentor comes from Greek mythology. In the ninth century BC, Homer introduced the basic components of the relationship in *The Odyssey*. The legendary epic

has it that Athena, the goddess of wisdom, transformed herself into an old man in order to become Mentor. Mentor was the friend of Odysseus, King of Ithaca. While Odysseus travelled the world in his ten-year odyssey, he entrusted Mentor with the education of his son, Telemachus. Telemachus' education was to include every developmental facet of his life: physical, intellectual, moral, spiritual, social, and administrative. This relationship between Telemachus and Mentor set the standard for characterizing future mentoring relationships such as the ones between Socrates and Plato, Freud and Jung, and Haydn and Beethoven (Merriam, 1983).

Although the idea of mentoring has existed for centuries, the concept was not given prominence until Levinson's (Levinson, Darrow, Klein, Levinson and McKee, 1978) extensive work in the late 1970's. Levinson focused on understanding mentoring and how it functions in the development of individual adults. In Levinson's words,

"The mentor relationship is one of the most complex, and developmentally important, a man can have in early adulthood. The mentor is ordinarily several years older, a person of greater experience and seniority in the world the young man is entering. No word currently in use is adequate to convey the nature of the relationship we have in mind here. Words such as "counselor" or "guru" suggest the most subtle meanings, but they have other connotations that would be misleading. The term "mentor" is generally used in a much narrower sense, to mean teacher, advisor or sponsor. As we use the term, it means all these things, and more" (p. 97).

According to this definition a mentor as a teacher, enhances the intellectual development of the student. As a sponsor, the mentor facilitates advancement, and as a counselor he/she provides moral support in times of stress. Levinson's definition of a

classic mentor also includes being a guide (i.e., welcoming the protégé into a new occupation and social world), and exemplar (i.e., setting an example for the student which in turn leads to admiration and emulation of the mentor's virtues, achievements, and way of living). In addition to the above characteristics, Levinson also argues that a mentor has a crucial developmental function to fulfil in the relationship, which is to "support and facilitate the *realization of the Dream*" (p. 98). The Dream is the vision each young person has about the kind of life he/she wants as an adult (Merriam, 1983). The mentor is one who can recognise and support this dream (Levinson et al, 1978).

In the research on mentoring, definitions range from simply "an experienced adult who befriends and guides a less experienced person" (Fagen, 1988), to the classic definition provided by Levinson et al (1978) noted above. Bowen (1986) based his definition on the work of Levinson, indicating that "mentoring occurs when a senior person in terms of age and experience undertakes to provide information, advice, and emotional support for a junior person in a relationship lasting over an extended period of time and marked by substantial emotional commitment by both parties" (p. 65). O'Neil (1981) on the other hand, describes mentoring as "the complex process where personal, role, and situational factors interact between an older more experienced professional person and a younger less experienced professional person" (p.14).

Given the broad range of definitions of mentor, it is not surprising that it is used interchangeably with supervisor, advisor, and teacher.

Mentoring and Graduate Student Supervision

Some universities use the descriptor mentor rather than research supervisor and indeed the relationship between supervisor and graduate student formed over the

extended period of the supervision process contains many of the elements also described in the mentoring process (Leder, 1995). However, Nerad (as cited in Gaffney, 1995) states there is a clear difference between supervising and mentoring graduate students. A supervisor is responsible for assisting students in selecting programs of study and for making sure that students make adequate progress toward the degree and fulfil all university requirements. A mentor (as defined by Levinson) is a person who takes a novice under his/her wing. The mentor helps the student set goals and standards and develop skills, protects the student from others in a way that allows room for risks and failure, facilitates the student's successful entrance into academic and professional circles, and ultimately passes on his or her work to the student. From this distinction, it would seem that supervision is simply an administrative mechanical process. Jacobi (1991) states that research supervisors often take a mentoring role which includes support and encouragement, guidance, facilitating access to resources and opportunities, providing information, and stimulating the acquisition of knowledge and serving as a role model.

Cronan-Hillix, Gensheimer, Cronan-Hillix, and Davidson (1986) examined the students' perspective of mentoring relationships to determine the prevalence and characteristics of such relationships in graduate training. Psychology graduate students were first asked if they had a mentor, and then asked about the role mentors played in their professional and social lives, and the qualities associated with good and poor mentors. Results showed that 53% of the students had mentors. However the students did not indicate whether their mentor was also their thesis/dissertation supervisor. The most frequently mentioned characteristic of good mentors was that they were interested in and supportive of the student. Personality characteristics were listed second most

frequently for a good mentor, and most frequently for a bad mentor. Personality characteristics of a good mentor included sense of humour, honesty, empathy, compassion, patience, flexibility and loyalty. For a bad mentor they included such things as egocentric, overextended, disorganised, dishonest, untrustworthy, rigid and critical. The term mentor in this study was open to subjective interpretation because the researchers allowed the respondents to "interpret it as they pleased" (Cronan-Hillix, Gensheimer, Cronan-Hillix, and Davidson, 1986, p. 124). Many of the characteristics listed for good mentors are similar to the characteristics listed for effective supervisors (McMichael, 1992; Powles, 1988; Teitelbaum, 1998). It could be that without defining mentor in the classical sense, students are interpreting it to mean the same thing as an effective supervisor.

Cronan-Hillix, Gensheimer, Cronan-Hillix and Davidson (1986) reported a significant positive relationship between having a mentor and student productivity (number of publications, number of conference papers, number of research projects). In addition, students who had mentors were more satisfied with their program. If students were confusing classic mentor with effective supervisor, then the results indicate that effective supervision and not necessarily mentoring has an effect on student productivity and satisfaction.

Long and McGinnis (1985) also examined mentoring between graduate students and supervisors to determine if mentoring had an affect on student careers. The study was conducted in the early eighties, however the participants were male biochemists who received their doctorates between 1957 and 1963. All the dissertation supervisors were assumed to be mentors, which was measured in terms of professional eminence (number

of awards), scientific performance (number of publications and citations), and collaboration with the student (number of publications with students' name during time of study and the three-year period following study). Long and McGinnis reported that the influence of a mentor begins with collaboration. Students who collaborate are more productive (number of publications) during their doctoral studies. The mentor's performance coupled with collaboration was a significant factor in determining a student's placement after graduation. The researchers concluded that having a mentor while in graduate school had a significant effect on a student's career.

Neither the study by Cronan-Hillix, Gensheimer, Cronan-Hillix, and Davidson (1986) or by Long and McGinnis (1985) used the classic definition of mentor provided by Levinson, therefore it is unknown if the relationships were in fact mentoring ones. It could possibly be that when supervisors provide some of the mentoring functions, he or she is seen as a mentor. This is not necessarily wrong, for one could argue that fulfilling all the functions of classic mentoring is not necessary in order for a supervisor to be seen as a mentor by a student.

Stafford and Robbins (1991) found that graduate students in Social Work identified both their professors and supervisors as mentors, however not in the classical sense. Of the 262 students surveyed, 132 reported being involved in a mentoring relationship, and 25% of the mentored students identified their supervisors as their mentors. The most important mentoring functions identified by the students were that the mentor: was available to discuss problems and offer suggestions, demonstrated professional characteristics that are desired in the profession, encouraged discussion of values and ethics, acted to instil confidence in the student, and acted as a trusted advisor

and confidante. Interestingly, the students who were not involved in a mentoring relationship with their supervisors identified the same functions as necessary for a mentoring relationship, if one was to occur. Results also indicated that being mentored enhanced the student's overall experience.

Friedman (1987) examined the prevalence and understanding of mentoring amongst graduate students and supervisors in Engineering, History and Economics. Before the study, Friedman made the assumption that the relationship between thesis supervisor and doctoral candidate would provide opportunity for the development of a mentoring relationship in the classical sense because of the nature of the relationship. The relationship extends over a period of three or more years and provides the opportunity for both student and supervisor to spend time together developing a research topic. In addition, it provides the student with the opportunity to observe and emulate the style and performance of the supervisor as teacher, researcher, thinker and writer.

However, findings were different than expected. Students had mentors other than their supervisors and supervisors generally did not mentor their graduate students. Comments from both students and professors indicated that mentoring in the classical sense (Levinson et al, 1978) is not typical of student/supervisor relationships. For example, a doctoral student in engineering stated "No, my advisor is not my mentor. I don't think that anyone here is a mentor; they're too busy" (p. 62). Another engineering student had a similar opinion saying "A mentor? Yes - but not my advisor. My father has been my mentor" (p.62). From the supervisors' perspective, one professor described a mentor as "a professor with a very dominant personality as well as a very pronounced ideology (regarding theory or methodology) that he gets his students to adopt. Right

now, I'm not interested in turning out clones, so up to now I have not been a mentor to anyone. Perhaps as I get older and develop less patience for alternative ways of thinking, I may become one." (p. 65). Another said "I certainly don't see myself as a mentor. Frankly, I see a good advisor/advisee relationship as one where you just help somebody launch and go off into his own orbit" (p. 65). Friedman found these perceptions to be similar across all three departments examined.

Kram (1985a) suggested that the environment strongly influences whether a mentoring relationship will form, how long it will last and how comprehensive, mutual and powerful it will be. In academia, departmental norms and atmosphere (collegiality vs. competition), availability of resources, and faculty-student ratios have been found to determine the amount and kind of mentoring that takes place (Carden, 1990). Friedman (1987) supports Kram's suggestions, and states that many of the supervisors he surveyed commented on the impossibility of mentoring when they had several (10-15) students to supervise, coupled with workload demands. Furthermore, although Friedman assumed prior to his study that the relationship between a student and supervisor provided the student with the opportunity to observe and emulate the supervisor, he did not take into account the issue of role modeling. It could be argued that students would only emulate the style and performance of the supervisor (a condition for developing a mentoring relationship) if supervisors were seen as role models. Role modeling has received much attention in the literature on supervision and mentoring and will be addressed in the next section.

Role Modeling

There is some confusion in the literature about role modeling in student-supervisory relationships and how it relates to mentoring and effective supervision. According to Morgan (1993) role modeling should include modeling research skills plus teaching skills if graduate students aspire for academic positions. Often supervision is focused on only imparting research skills. Modeling involves an "advanced person engaging in the desired behaviors, so that a younger, less experienced person can mould their behaviour in a similar fashion" (Morgan, 1993, p. 4). In other words, the supervisor demonstrates how the job is done. The problem with modeling, though, is that the less experienced person simply observes the end product without experiencing the factors involved in the behaviors they have seen. Furthermore, supervision often only involves role modeling in terms of research skills. There are substantial consequences to faculty for good research, such as promotions, pay raises, and fame, therefore these skills become the focus of their career (Cesa & Fraser, 1989). The benefits for good teaching are less clear and thus emphasis on role modeling in the teaching domain is lessened.

Mentoring graduate students goes beyond role modeling. It is more than just allowing a less experienced person see the role, it "invites the person to assume the role they may one day hold" (Cesa & Fraser, 1989, p. 5). The student in this case assumes the role with the guidance of a more experienced individual who provides knowledge, support, guidance and hope. A supervisor who mentors their graduate student does much more than role model. He/she prepares the student for all the roles necessary in academia, enhancing career and psychosocial development.

It is clear from the above arguments that role modeling is an important characteristic in the student/supervisor relationship. It has also been pointed out that perhaps mentoring and effective supervision are one and the same. In addition, as Cesa and Fraser (1989) have pointed out, mentoring goes beyond role modeling. Is it therefore safe to say that effective supervision also goes beyond role modeling? If all the above are true, then it seems reasonable to ask if role modeling is at the very least one of many characteristics of effective supervision. To answer this question, role modeling will be explored in the present study in terms of effective supervision and overall satisfaction with the supervisory relationship.

To this point, much has been said concerning the characteristics of supervisors, however the supervisory relationship is two-way and therefore the characteristics of the students must also be examined. Unfortunately most of the research on supervision focuses on the supervisory process and on the behaviors of the supervisor. Very few studies have examined the characteristics or behaviors of the students.

Student Characteristics

Muszunski and Akamatsu (1991) found that student procrastination was an area of concern for supervisors. In their study, it was found that lack of structure, poor interest in topic, self-denigration, and a low frustration level all contributed to procrastination and subsequently poor completion. Supervision itself had less to do with success than the student's own motivation and organization.

A second study examining student characteristics was by McMichael (1992) who asked supervisors and students how they would describe the student's role in the relationship. From the interviews, supervisors identified seven expectations they had of

students. These were: students should have the ability to organize and be effective with their time, they should be independent workers, they should be committed to their work, and they should treat their supervisor with respect. In addition, students should aspire to producing high quality work, be competent communicators (both written and verbal), and have clear objectives about their research. Students on the other hand described their role in terms of being punctual. They said students should always meet deadlines and have an achievable project within a specified timeline.

As previously mentioned, there are few studies examining the student's role in the supervisory relationships. Given the limited research, it seems reasonable to explore this further to enhance our understanding of supervision in graduate education. In addition to exploring supervisor characteristics, this study will also explore student characteristics.

Finally, researchers have attempted to reduce the number of characteristics identified as important to more general constructs. Unfortunately, the research conducted to this point has focused on specific areas of supervision and may not be generalizable to all supervisory relationships in graduate education. Two of these studies are described below.

Constructs of the Supervisory Relationship

McMichael (1992) identified two major constructs onto which most supervisor characteristics and behaviors load. These were educational support and personal support. Educational support included such things as guidance, expertise, questioning, probing and time management; personal support included motivation, rapport, and accessibility. Two constructs were also identified for categorizing the student characteristics. These were dissertation orientation (scholarly standards, communication skills, and research

application skills), and personal qualities (organization, commitment, independence, and respectfulness).

Friedlander and Ward (1984) in examining supervision in a clinical and psychotherapy setting, identified three constructs in the supervisory relationship: attractive (warm, supportive, open and flexible), interpersonally sensitive (invested, perceptive and committed), and task oriented (goal-oriented, focused, practical).

The characteristics and constructs identified by McMichael (1992) are limited to supervisory relationships at the masters level in Education and those identified by Friedlander and Ward (1984) are limited to supervisory relationships in clinical psychology and psychotherapy. Both studies are very department-specific. This study will identify the characteristics and construct of effective supervision across all departments in graduate education.

Demographic Variables and Supervision

In an attempt to understand student-supervisory relationships, researchers have not only focused on the characteristics and behaviors of students and supervisors but also on demographic and situational variables. For the purpose of this study, age, gender, Faculty, and status will be examined. Student status will be examined in terms of part-time versus full-time, and masters level versus doctoral level. Supervisor status will be examined in terms of academic rank (i.e., assistant, associate, full, adjunct, and emeritus professor)

Age

Age is a variable that can vary greatly in graduate programs, especially with more and more students taking time off to work and gain experience before returning to school to pursue advanced training and education (LaPidus, 1990). Supervisors therefore may find themselves supervising students of all ages, not only traditional graduate students in their early to mid-twenties. Only one study was found which examined student age in relation to supervision in graduate schools. This was by Powles (1988) who found that students under 30 were more dissatisfied than students over 30 in all aspects of guidance and supervision. A possible explanation might be that older, more experienced students are more independent and therefore do not need the day to day encouragement, guidance and support of their supervisor. They may have intrinsic motivation and an experiential understanding of the process. Age can serve as a proxy for experience, with the assumption that older students (>35) entering graduate school are bringing life-experience into the process.

With respect to age of supervisor, Yerushalmi (1993) wrote that as supervisors approach middle-age, they may experience stagnation, depression, cynicism and pessimism, which can have a negative effect on supervision. Supervisors may feel threatened in the presence of younger students aspiring for their jobs. The older supervisor may become anxious about the demands of supervision and as a result may become distant and hostile. Yerushalmis' theoretical points have not been supported with any empirical research. The present study will include supervisor age to explore the impact it may have on effective supervision.

Gender

Gender issues have become increasingly important in the research on supervision. Women report more barriers to successful supervisory relationships than do men (Burke & McKeen, 1996). Similar to some mentoring relationships in business organizations, it has been suggested that because of the nature of the relationship (closeness and intellectual intimacy) coupled with organizational demographics (most mentors in academia are men) (Burke, 1984; Burke & McKeen, 1996), cross-gender relationships may raise additional issues that tend to be absent in same-sex relationships (typically male-male). One important issue is that outsiders may perceive the relationship to be other than a professional one (Clawson & Kram, 1984).

Powles (1993) found in her research that more female than male students were dissatisfied on 13 of 15 aspects of supervision, such as access to their supervisors and the personal facets of the supervisory relationship. Only in "freedom to plan" and "guidance in writing" were males more dissatisfied, however these differences were not statistically significant. Powles also indicated that women's aspirations to pursue academic careers decreased during and after candidature. Hite (1985) investigated female doctoral students and their perceptions and concerns while in graduate school. Her results indicated that men experienced more role congruence than females. Hite concluded that women at the doctoral level might need more encouragement than males because they may be coping with conflicting role demands. The study also indicated that men also perceived more support from their supervisors than did their female colleagues, regardless of field of study. Hite reported that female students might believe that their professors do not think they have the ability and motivation to succeed.

A third study examining gender and supervision found that male students perceived better relationships with their supervisors, regardless of the gender of the supervisor, than female students did. In addition, male supervisors also perceived better relationships with students, regardless of student gender, than did female supervisors (Worthington & Stern, 1985). The authors concluded that perhaps males and females differ in their standards for what constitutes a good relationship.

Although several researchers have reported that male students generally complete their degree requirements more quickly than female students do (Sheinin, 1989; Tuckman, Coyle, & Bae, 1990; Yeates, 1991), others suggest that gender differences occur only in certain departments (Bowen & Rudenstine, 1992). For example the Canadian Association for Graduate Studies (1994) conducted an analysis of gender differences in time to completion for doctoral students. Data from 30 Canadian graduate schools revealed that women in the Social, Natural, Applied and Life sciences programs took longer than men to complete their degree requirements while the reverse was true for students in the Humanities.

Seagram, Gould and Pyke (1998) suggested that perhaps women take longer because they have different experiences as graduate students. Some have found that women talk about a 'chilly climate' (Pyke, 1996) and the lack of appropriate role models (Seagram, Gould & Pyke, 1998). The results from the study by Seagram, Gould and Pyke also indicated that men expressed higher levels of satisfaction than women with the amount of feedback provided by supervisors. Finally, men reported more supervisor interest in topic than did women (Seagram, Gould & Pyke, 1998).

Since a key factor in the successful and timely completion of a doctorate is the supervisory/mentoring relationship, gender differences in the nature of the supervisory experience may help explain gender differences in time to completion (Girves and Wemmerus, 1988; Godard, 1992). Gender differences in perception of effective supervision and satisfaction will be explored in this study.

Faculty

Research has indicated differences in supervisory practice across the various departments and Faculties in graduate education (Donald, Saroyan, & Denison, 1995; Moses, 1992). While most Faculties agree on the need for knowledge of research area and availability for effective supervision (Donald, Saroyan, & Denison, 1995; Moses, 1984; Powles, 1993) discrepancies occur in the area of providing feedback and being sensitive to student needs. Non-science based programs tend to place more emphasis on these needs (Donald, Saroyan, & Deblois, 1995). To date, research examining the differences in perceived supervisory effectiveness and the importance students place on the different characteristics of supervision have only been examined in Humanities (Hodgson & Simoni, 1995; Seagram, Gould & Pyke, 1998), Natural Sciences (Maor, & Fraser, 1995; Seagram, Gould & Pyke, 1998), Social Sciences (Burgess, Pole, & Hockey, 1994; Seagram, Gould & Pyke, 1998), Social Work (Collins, 1993; Vonk & Thyer, 1997) and Clinical/Counseling Psychology (Friedlander & Ward, 1984; Kaiser, 1992; Muszynski & Akamatsu, 1991; Phillips & Russell, 1994).

For example, Seagram, Gould and Pyke, (1998) reported that students in Social Sciences are more likely to collaborate with their supervisor on papers and also reported higher levels of overall satisfaction with supervision than students in the Natural Sciences

or Humanities. However, it was also reported that students in the Natural Sciences met more frequently with their supervisors than students in Humanities or the Social Sciences. It is interesting to note that frequency of meetings was not the deciding factor in overall satisfaction with students in the Social Sciences and Natural Sciences.

To this point, there does not appear to be any research examining the differences in supervision and satisfaction with supervision across all Faculties in graduate school, especially in the area of Education, Engineering, Kinesiology, Nursing and Medical Science. The present study will include Faculty as a variable, which will contribute to our understanding of the student-supervisor relationship across all areas of graduate education.

Status

For exploratory purposes, the perceptions of effective supervision will be compared between students completing a master's degree and those completing a doctoral degree. To date, there does not appear to be any research examining these differences.

In addition, supervisor status in terms of academic rank will be examined to determine if perceptions differ according to position. This as well has not been explored in previous research. In terms of academic rank, supervisors will be grouped according to the following titles: Assistant Professor, Associate Professor, Full Professor, Emeritus Professor, and Adjunct Professor.

Measures of Supervision

According to Kadushin (1992), evaluation of supervisors and the supervisory relationship does not seem to be common. There are however a few assessment

instruments that have been developed for the purpose of evaluating various elements of supervisory effectiveness (Vonk & Thyer, 1997). Most of these have been developed for use in clinical and counselling programs. Several of these instruments are reviewed below.

1. Research Supervision Practices

Youngman (1994) sought to generate descriptions of research supervision practices, and student experiences and perceptions. Aims of the study were to develop a self-report instrument for describing the practices of research supervision, and the experiences of research students. The instrument developed for the study was used to identify the similarities and differences in the experiences of students and supervisors in the Social Sciences. The instrument developed contained a list of behaviors which students and supervisors had to check if the behavior was experienced. This was not designed using a Likert scale, which would indicate the frequency of the behavior. Instead, participants simply indicated 'yes' or 'no' to experiencing the behavior.

The final outcome compared the experiences students reported with the experiences supervisors reported. The behaviors were then correlated with general situational factors such as subject, course level, and full-time/part-time, to see if the behaviors experienced were different amongst the groups. The study did not examine individual relationships to see if there was any correlation between particular behaviors and satisfaction with the relationship. Supervisors were asked to refer to their most recently completed research student, while students were asked to refer to the supervision in their most recent course. Although this instrument has applicability for classroom

teaching/supervision, it was not designed to examine the research supervision of doctoral students.

2. Supervisor Emphasis Rating Scale

This instrument designed by Lanning (1986) measures the degree of emphasis on 60 skills and behaviors that are considered to be important for beginning Master's level counseling students to exhibit. A 7-point Likert scale was used (1 = no emphasis; 7 = strong emphasis). The instrument contains four scales with 15 items comprising each scale. The Four scales are: Process Skills (apply to interaction between counselor and client in the counseling relationship), Personalization Skills (inner attitudes, beliefs, and feelings of the counselor), Conceptual Skills (cognitive abilities the counselor has in relation to effective counseling), and Professional Behavior (aspects of a counselor's behavior that reflect an ability to adhere to commonly accepted standards for and principals of professional practice). Participants are required to rate the degree to which each competency was emphasized in supervision. This instrument looks at what is happening in supervision, but it is restricted to the counseling student-supervisor relationship (i.e., discipline-specific). In addition, it does not address the issue of effective supervision beyond whether or not the appropriate skills were emphasized by the supervisor.

3. Supervisory Styles Inventory (SSI)

Described as a promising self-report (Galassi & Trent, 1987), the SSI (Friedlander & Ward, 1984) focuses on the process of supervision in Psychotherapy and counseling psychology. It was created to measure the "supervisor's distinctive manner of approaching and responding to trainees" (Friedlander & Ward, 1984, p.541). On the SSI,

supervisors are rated by themselves or by supervisees on 25 bipolar adjectives across three factors: attractiveness (warm, supportive, friendly), interpersonal sensitivity (invested, therapeutic, perceptive), and task orientation (focused, thorough, practical). The instrument is primarily used to examine supervisory style within supervisor/student/client situations. Participants rate items according to the degree to which they reflect 'general style of supervision' with all students. A Likert scale is used ranging from 1 (not very) to 7 (very). Because of the focus on psychotherapy supervision, this instrument is not a good measure for this study.

4. Supervisory Questionnaire (SQ)

The Supervisory Questionnaire was designed by Worthington and Roehlke (1979) to measure the 'supervisee's perception of frequency of their supervisor's use of specific supervisor behaviors' (Vonk & Thyer, 1997, p. 109). The instrument contains items that describe supervisor behaviors. The behaviors are measured on a 5-point Likert scale ranging from 'perfectly descriptive of my supervisor's behavior' to 'never'. This instrument was also designed specifically to examine supervision in counselling programs. All items contain terms such as 'counsellor' and 'counseling practice'. Therefore is not appropriate for this study.

As part of the present study, an instrument will be designed to examine the supervisory relationship across all Faculties and departments of graduate education. From the instrument, it will be possible to identify the constructs relevant to the student-supervisory relationship. In addition, perceptions of effectiveness and areas of discrepancies will be identified. It will also be possible to determine the impact of

demographic and situational factors on the relationship. More specifically, the following research questions guide this study.

Research Questions

The present study will investigate the supervisory relationship that exists between students and supervisors in graduate school. Specifically, the research questions are:

- 1) What are the most important characteristics of the student-supervisor relationship in graduate education?
 - a) What characteristics do students perceive as important?
 - b) What characteristics do supervisors perceive as important?
 - c) Is there a significant difference between the characteristics students perceive as important and those that supervisors perceive as important?
- 2) Can the most important characteristics be grouped into more general categories or constructs?
- 3) Is there a significant relationship between satisfaction with and perceived impact of the characteristics for both students and supervisors?
- 4) Is there a significant relationship and/or difference between perceived impact of the characteristics for both students and supervisors?
- 5) Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?
- 6) Is there a significant relationship between the satisfaction students and supervisors have with individual characteristics and overall satisfaction with the supervisory relationship?

- 7) **Is there a significant relationship between the overall satisfaction with the supervisory experience and the satisfaction with graduate education?**
- 8) **Is there a significant relationship between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?**
- 9) **Are there significant differences between demographic variables (i.e., gender, age, Faculty) and the satisfaction with the characteristics for both students and supervisors?**
- 10) **Are there significant differences between demographic variables (i.e., age, gender, Faculty) and the perceived impact of the characteristics for both students and supervisors?**
- 11) **Is there a significant difference between why students and supervisors decide to work together?**

CHAPTER THREE

METHODOLOGY

The purpose of this study was to identify the most important characteristics relevant to the perception of effective supervision and to examine satisfaction and impact of the characteristics in terms of demographic and situational variables. The methodology for the present study was divided into two phases. Phase One involved two tasks. The first tasks identified the most important characteristics in the student-supervisor relationship. The second tasks involved the development of a survey that captured perceptions of satisfaction and impact of the characteristics on the supervisory relationship, the student's studies and final degree outcome. Two parallel forms of the survey were developed in Phase One, one for supervisors (*Graduate Supervisory Relationship Scale - Form A*) and a second for students (*Graduate Supervisory Relationship Scale - Form B*). The student survey included demographic information on the students and the supervisor survey included demographic information on the supervisors.

Phase Two involved administering the final survey to students and their supervisors to examine the quality and nature of the supervisory relationship in graduate education.

Rationale for Research Methodology

Phase One involved both qualitative and quantitative research methodologies while Phase Two involved survey methodology. The rationale for the methodologies chosen for each phase is outlined below.

Combined Qualitative and Quantitative Design for Phase One

In an attempt to capture the most important characteristics relevant to the perception of effective supervision, both qualitative and quantitative measures were used. Denzin (1978) used the term *triangulation* to argue for the combination of methodologies in the study of the same phenomenon. *Triangulation* is based on the assumption that "any bias inherent in particular data sources, investigator, and method would be neutralized when used in conjunction with other data sources, investigators, and methods" (Creswell, 1994, pp. 174). In addition to triangulation, Greene, Caracelli, and Graham (1989) have identified other advantages to using combined methods. For one, overlapping and different facets of a phenomenon may emerge from a combination of methodologies. Second, mixed methods add scope and breadth to a study.

In Phase One of this study, a quantitative measure was used to identify the importance of the supervisory characteristics found to be relevant in the literature. In addition, a qualitative measure (structured interviews) was used to further support the quantitative measure and to capture any additional information relevant to graduate student supervision. The data from both methods were then combined to identify the most important characteristics in supervisory relationships and to design the survey for Phase Two.

Quantitative Survey Methodology for Phase Two

Survey research is one of the best research designs available to the social scientist interested in describing or exploring a population of individuals too large to observe directly (Babbie, 1990). A survey design provides a quantitative description of the population through the data collection process of asking questions of people (Fowler,

1988). From the data collection, the researcher can then generalize the findings from a sample of responses to a population (Creswell, 1994). Inferences can then be made about some characteristic, attitude, or behavior of the population being studied (Babbie, 1990).

The survey approach is particularly pertinent to the goals of this study for several reasons. First, this strategy solicits the required perceptions directly from active participants involved in the student-supervisor relationship. Perception is involved with attitude formation and decision-making because attitudes are derived from experience rather than being innate (Duquette, 1993). Surveys are an excellent basis for describing people's attitudes and opinions (Shaughnessy & Zechmeister, 1994). Second, surveys use the same phrasing and ordering of questions, which makes it "possible to summarize the views of all respondents succinctly" (Shaughnessy & Zechmeister, 1994, pp. 114). While most survey items (Likert-type) are subject to artificially imposed forced responses, this study included a request for additional individual comments, which allowed participants the opportunity to provide relevant supplementary data. Third, surveys are a more efficient approach for examining large populations. One purpose of this study was to examine differences in perceptions in terms of demographic variables such as age, Faculty and gender. A large sample size was therefore required to effectively explore the differences from one group to the next. Finally, survey methodology improves response rate as participants can complete the survey at a time and place of their convenience (Babbie, 1992).

Phase One

The purposes of Phase One were two fold. First, to identify the most important characteristics in the student-supervisor relationship. The second was to develop a survey that captured perceptions of satisfaction and impact of the characteristics on the supervisory relationship, the student's studies and final degree outcome. Specifically, Phase One addressed the following research question:

- 1) What are the most important characteristics of the student-supervisor relationship in graduate education?
 - a) What characteristics do students perceive as important?
 - b) What characteristics do supervisors perceive as important?
 - c) Is there a significant difference between the characteristics students perceive as important and those that supervisors perceive as important?

Participants

One goal of Phase One was to identify the most important characteristics in graduate student supervision. It was therefore essential to have students and supervisors who were experienced with supervision participate in this Phase. The participants were doctoral students and emeritus professors from a graduate school population at a large urban university. The doctoral students were chosen for two reasons. First, they had experience with supervision, all had completed most of the journey and were close to defending their dissertations. Second, the availability of the students, as they were still on campus. Interviewing/surveying doctoral students who had completed their studies would be difficult, as most were no longer available on campus. Emeritus professors were chosen for their years of supervision experience.

The names of 30 doctoral students and 30 emeritus professors were randomly selected from the university directory. Invitations to participate (Appendix A) were sent by campus mail. A total of 16 individuals responded by email and agreed to participate in the interview. The six emeritus professors (five male and one female) and ten graduate students (three male and seven female) represented a range of Faculties (i.e., Education, Engineering, Humanities, Science, and Social Science).

Instrument and Interview Questions

The *List of Supervisory Characteristics* (Appendix B) was an instrument designed specifically for Phase One of this study. This is a compilation of mostly one-word descriptors identified by previous research to be relevant in supervisory relationships (Carey & Ivey, 1988; Eggleston & Delamont, 1988; Hill, Acker, & Black, 1994; Kadushin, 1992; Kaiser, 1997; McMichael, 1992; Powles, 1988; Teitelbaum, 1998). The *List of Supervisory Characteristics* was divided into three parts. The first part consisted of 41 supervisor characteristics. The second part consisted of 30 student characteristics, and the third part consisted of 11 general characteristics of supervision.

For each part, participants were requested to rate the importance of each characteristic in the supervisory relationship using a 5-point Likert-type scale ranging from 1 (very unimportant) to 5 (very important). Given the goal of this study, ratings were necessary to identify the most important characteristics in the relationship, otherwise an assumption would have been made that all characteristics are equally important.

The interview questions for the students (Appendix C) and the supervisors (Appendix D) were designed to complement the *List of Supervisory Characteristics* and to add scope and breadth to the study.

Interview Procedures

Participants were contacted by email to arrange a time and place for the interview. All meetings with participants took place at the University of Calgary. At the beginning of each session, participants were informed about the purpose and methodology of the study, and the nature of their involvement. They were then asked again if they wished to participate. Those who agreed to participate completed a copy of the consent form (Appendix E) prior to the commencement of the interview.

The researcher conducted structured face-to-face interviews with each participant. All interviews were audio recorded and lasted from 45 minutes to 60 minutes each.

Once the interview questions had all been answered, participants were asked to rate the importance of the characteristics on the *List of Supervisory Characteristics*. While they were rating the characteristics, they shared their opinions and interpretations of the characteristics. For example, one participant stated "supportive can mean several things, such as supportive of personal problems, or supportive of academic problems." The researcher recorded all comments such as these and used them to construct items for the final survey.

Data Analysis

The ratings on the *List of Supervisory Characteristics* were used to calculate means for the students, the supervisors, and both students and supervisors together. A mean of 4.00 or greater was used to select the most important characteristics (Appendix

F) and to eliminate characteristics that were not perceived as important. This ensured that the characteristics chosen were on average "important" to "very important" as perceived by the participants. Using this as a criterion, *The List of Supervisory Characteristics* was reduced to 14 supervisor characteristics, 13 student characteristics, and 4 characteristics of supervision.

The interviews were audio recorded and transcribed by the researcher. The transcripts were then analyzed to identify common themes and important characteristics in graduate student supervision. From the content analyses of the interview transcriptions, additional characteristics, which were not listed on the *List of Supervisory Characteristics*, were identified by the participants as important in the supervisory relationship. These important characteristics which emerged from the interviews were combined with the reduced list of characteristics from the *List of Supervisory Characteristics* and used to develop the survey for Phase Two.

Because the data from the interviews add scope and breadth to this study, the results are presented in Chapter Four, and discussed in Chapter Five.

Survey Development

The development of the final survey for Phase Two involved several tasks. First, items measuring demographic information, reason for choosing a supervisor/agreeing to supervise a student and overall satisfaction were designed for both students and supervisors. Second, items representing the important characteristics in the relationship were constructed and written in two parallel forms: one form for supervisors and one for students. Third, a preliminary survey was tested on a sample of students and supervisors to further determine the relative importance of each item in the relationship and to

identify the most important characteristics of the student-supervisor relationship in graduate education. The items measuring the most important characteristics formed the basis for the final survey measuring satisfaction and experience with supervision. Finally, open-ended items were designed to gather additional information from the participants.

Parallel forms of the survey were designed so that data could be collected from both students and supervisors. The names given to the two forms were *Graduate Supervisory Relationship Scale - Form A: Supervisors* and *Graduate Supervisory Relationship Scale - Form B: Students*.

The final survey consisted of six subscales. The development of each subscale will be addressed in the following section of this chapter. However, subscale six will be described after the section on the Pilot Test, as it was added after pilot testing.

Subscale 1: Supervisor and Student Information

The first subscale consisted of items designed to collect demographic information. Form A for supervisors contained 5 items. These were: gender, age, position (e.g., Assistant Professor), Faculty or Department, and number of years supervising graduate students. Form B for students contained 7 items, which were gender, age, degree, Faculty or Department, area of specialisation, years to complete program, and citizenship. Citizenship was added for exploratory purposes to examine the supervisory experiences of visiting students.

Subscale 2: General Information about the Supervisory Relationship

The second subscale of the survey was designed to collect general data about the supervisory relationship. The goal for this section was to determine why students and supervisors decide to work together, whether supervisors are seen as role models,

whether the nature of the relationship impacts the decision to pursue an academic career and finally overall satisfaction with supervision. The data generated from this subscale would contribute to the understanding of the supervisory relationship, while building upon the literature presented in Chapter Two on role modeling, and overall satisfaction with supervision.

Form A for supervisors contained 3 items. The first item asked supervisors if they had a choice in supervising the student. The second item consisted of 7 elements, which might influence the decision to supervise a student. Supervisors were asked to rate the importance of each in their decision to supervise. Importance was rated on a 5-point, Likert-type scale (i.e., 1 = very unimportant, 2 = unimportant, 3 = neither important nor unimportant, 4 = important, and 5 = very important). The third item on Form A for supervisors measured overall satisfaction with the supervisory relationship, also using a 5-point Likert-type scale (1 = very satisfied, 2 = satisfied, 3 = neither satisfied nor dissatisfied, 4 = dissatisfied, 5 = very dissatisfied).

Form B for students consisted of 8 items. Items 1 and 2 were parallel items to items 1 and 2 on Form A for supervisors, whereby students were first asked if they had a choice in who supervised them and then asked to rate the importance of 8 elements in their decision to work with their supervisor. The third item captured information on whether students changed supervisors during their program and for what reason. This item would contribute the understanding of possible areas of conflict between a student and supervisor. The fourth item asked students if they considered their supervisor to be a role model. The data collected from this item would be used to examine the relationship between role modeling and satisfaction with supervision.

The fifth and sixth items explored whether students were planning an academic career and whether the supervisory relationship influenced their career decision. The final two items of this subscale on Form B measured the students overall satisfaction with their supervisory experience and overall satisfaction with their graduate education. Both of these items were assessed using a 5-point Likert-type scale (i.e., 1 = very satisfied, 2 = satisfied, 3 = neither satisfied nor dissatisfied, 4 = dissatisfied, 5 = very dissatisfied).

Subscales 3, 4 and 5: Supervisor Characteristics, Characteristics of Supervision and Student Characteristics

Subscales 3, 4 and 5 were designed to measure satisfaction with and impact of the most important characteristics in the supervisory relationship in graduate education. The development of these three subscales will be addressed together, as item construction and design were similar for each.

Given that single-word characteristics are somewhat vague and subjective, it was not feasible to use the characteristics from the *List of Supervisory Characteristics* as the items to examine satisfaction and impact on the final survey (*Graduate Supervisory Relationship Scale - Form A and Form B*). For example, a characteristic such as 'gives guidance', could be interpreted in many different ways making it difficult for participants to rate satisfaction. To be more specific, 'gives guidance' could be interpreted in any one of the following ways:

- Supervisor provides guidance on surviving in graduate school
- Supervisor provides guidance on course selection
- Supervisor provides guidance on reading materials/resources
- Supervisor provides guidance on research topic
- Supervisor provides guidance on proposal writing

- Supervisor provides guidance on thesis/dissertation writing

Given the multiple ways to interpret characteristics such as 'gives guidance', it was necessary to construct descriptive items corresponding to each important characteristic. This would lead to a better understanding of the exact nature and importance of each characteristic within the supervisory relationship.

The researcher therefore generated a pool of descriptive items for each of the characteristics identified as important from the content analysis of transcribed interviews and the *List of Supervisory Characteristics*. A total of 87 items were generated: 49 supervisor characteristics (subscale 3), 6 characteristics of supervision (subscale 4), and 32 student characteristics (subscale 5). Each item was then judged independently by two assistants. The assistants were provided with the list of important characteristics and the 87 items. They were then asked to identify the characteristic that each item was measuring and to edit the items for clarity. This ensured content validity and interrater agreement.

Pilot Test

The 87 items were given to a sample of students and supervisors to further determine the relative importance of each item in the relationship and to reduce the survey to include only the most important characteristics. The results from this part of the study addressed research question one, which was to determine the most important characteristics in the supervisory relationship in graduate education. Importance was measured on a 5-point Likert-type scale (i.e., 1 = very unimportant, 2 = unimportant, 3 = neither important nor unimportant, 4 = important, and 5 = very important).

As part of the pilot test, subscales 1 and 2 and the format for measuring satisfaction and impact for subscales 3, 4 and 5 were also tested. Satisfaction was measured on a 5-point Likert-type scale (i.e., 1 = very dissatisfied, 2 = dissatisfied, 3 = neither satisfied nor dissatisfied, 4 = satisfied, and 5 = very satisfied). Impact was also measured using a 5-point Likert-type scale (i.e., 1 = very negative impact, 2 = negative impact, 3 = no impact, 4 = positive impact, and 5 = very positive impact).

Supervisors were asked to rate their satisfaction with the student characteristics, whereas students were asked to rate their satisfaction with the supervisor characteristics and characteristics of supervision. Both supervisors and students were asked to rate the impact of the supervisor characteristics, the characteristics of supervision and the student characteristics on the supervisory relationship, the student's studies and/or final degree outcome.

Ten students and ten supervisors participated in this portion of the study. Participants were graduate students and supervisors from a variety of Faculties and departments at the University of Calgary who were known to the researcher. Each participant was approached by the researcher and asked if he/she would complete the pilot test. A letter describing the nature of the study and involvement in the study was distributed to each supervisor (Appendix G) and each student (Appendix H). Once participants agreed to participate, consent forms were completed (Appendix I). This was followed by the completion of the survey.

For the purpose of pilot testing, two open-ended questions were added to the survey. The first asked how long it took participants to complete the survey and the second requested comments and feedback about the survey.

Identification of the Most Important Characteristics

Using a mean of 4.00 or greater as a criterion measuring the perceived importance of the original 87 survey items, the most important characteristics in the student-supervisory relationship emerged from the pilot test. The final survey consisted of 16 items measuring supervisor characteristics (subscale 3), 2 items measuring characteristics of supervision (subscale 4), and 11 items measuring student characteristics (subscale 5). The means for these items ranged from 4.00 to 5.00 indicating 'important' to 'very important' in the relationship.

The rationale for identifying the most important characteristics and reducing the length of the survey was supported by the participants in the feedback received from the pilot test. Five supervisors and seven students reported that the survey was too time consuming and recommended it be reduced. Two supervisors and Four students suggested identifying the top 10-15 important characteristics or 'salient issues' of supervision.

The identification of the most important characteristics in the supervisory relationship was a major component of this study, addressing Research Question 1. Therefore the results in terms of means, standard deviations, comments and associated descriptors for each of the items will be presented in Chapter Four and Discussed in Chapter Five.

Subscale 6: Open-Ended Questions

Feedback from the pilot study led to the development of subscale 6. Participant comments included "having open-ended questions to expand on the relationship", "the study should incorporate a qualitative component to capture additional characteristics",

and "the survey should include questions that examine negative characteristics". Given that many items were eliminated from the survey, as they were not identified as the most important in the supervisory relationship, coupled with the comments from participants, a sixth subscale was designed. This subscale contained three open-ended questions. The first question asked participants to comment on the most important characteristics in their supervisory relationship. The second question asked if anything had a negative impact on their supervisory relationship. Finally, the third question asked participants to comment on the factors contributing to the student's success.

This concluded Phase One of the Study. The *Graduate Supervisory Relationship Scale - Form A: Supervisors* and the *Graduate Supervisory Relationship Scale Form B: Students* (Appendix J and Appendix K respectively) were complete and ready to use in Phase Two of the study.

Phase Two

The purpose of Phase Two was to explore the satisfaction with and impact of the most important characteristics in graduate student supervision. The results of Phase Two would address research questions two to eleven. These were:

- 2) Can the most important characteristics be grouped into more general categories or constructs?
- 3) Is there a significant relationship between satisfaction with and perceived impact of the characteristics for both students and supervisors?
- 4) Is there a significant relationship and/or difference between perceived impact of the characteristics for both students and supervisors?

- 5) Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?
- 6) Is there a significant relationship between the satisfaction students and supervisors have with individual characteristics and overall satisfaction with the supervisory relationship?
- 7) Is there a significant relationship between the overall satisfaction with the supervisory experience and the satisfaction with graduate education?
- 8) Is there a significant relationship between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?
- 9) Are there significant differences between demographic variables (i.e., gender, age, Faculty) and the satisfaction with the characteristics for both students and supervisors?
- 10) Are there significant differences between demographic variables (i.e., age, gender, Faculty) and the perceived impact of the characteristics for both students and supervisors?
- 11) Is there a significant difference between why students and supervisors decide to work together?

Participants

Graduate students who had completed their degree and their supervisors participated in this part of the study. The students had completed a masters or doctoral degree and had convocated in November 2000. By choosing recent graduates, it was ensured that the students had experienced all stages of the supervisory relationship and the experiences were 'fresh' in their minds. Survey packages were distributed to 305

students and a total of 121 students agreed to participate and returned the completed surveys (response rate of 40%). Descriptive data for the student participants are presented in Tables 1.0 to 1.4.

Table 1.0 **Student Gender Distribution**

	Male	Female
n	48	73
(%)	(39.7)	(60.3)

Table 1.1 **Student Age Distribution**

	< 26	26 – 30	31 -35	36-40	41 - 45	46 - 50	> 50
n	10	58	21	8	11	7	6
(%)	(8.3)	(47.9)	(17.4)	(6.6)	(9.1)	(5.8)	(5.0)

Table 1.2 **Student Degree Distribution**

	Masters	PhD
n	95	26
(%)	(78.5)	(21.5)

Table 1.3 **Student Citizenship Distribution**

	Canadian	Landed Immigrant	Visa Student	Other
n	112	1	5	3
(%)	(92.6)	(0.8)	(4.1)	(2.5)

Table 1.4 Student Faculty Distribution

	Communication & Culture	Education	Engineering	Environmental Design	Humanities	Kinesiology
n	2	24	10	8	7	10
(%)	(1.7)	(19.8)	(8.3)	(6.6)	(5.8)	(8.3)

	Management	Medical Sciences	Nursing	Sciences	Social Sciences	Social Work
n	2	7	8	20	16	7
(%)	(1.7)	(5.8)	(6.6)	(16.5)	(13.2)	(5.8)

While it was the goal of the study to sample the perceptions of both students and supervisors, the *Graduate Supervisory Relationship Scale - Form A and Form B* were designed to sample specific student and supervisor dyad relationships.

The supervisors were therefore selected based on whether one or more of their students convocating in November 2000 had agreed to participate. In total 121 survey packages were sent to supervisors with a total of 43 agreeing to participate and returning the completed surveys (response rate of 35.5%). Descriptive data for the supervisor participants are presented in Tables 2.0 to 2.3.

Table 2.0 Supervisor Gender Distribution

	Male	Female
n	28	15
(%)	65.1	34.9

Table 2.1 Supervisor Age Distribution

	< 31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	> 65
n	0	1	5	4	10	12	7	4	0
(%)	0	2.3	11.6	9.3	23.3	27.9	16.3	9.3	0

Table 2.2 **Supervisor Faculty Distribution**

	Communication & Culture	Education	Engineering	Environmental Design	Humanities	Kinesiology
n	0	11	4	0	2	6
(%)	0	25.6	9.3	0	4.7	14.0

	Management	Medical Sciences	Nursing	Sciences	Social Sciences	Social Work
n	0	2	4	5	7	2
(%)	0	4.7	9.3	11.6	16.3	4.7

Table 2.3 **Supervisor Rank Distribution**

	Assistant Professor	Associate Professor	Full Professor	Emeritus	Adjunct
n	3	14	25	1	0
(%)	(7.0)	(32.6)	(58.1)	(2.3)	(0)

Rationale for Examining Dyads

Supervision is seen as both a relationship and a process (Chen & Bernstein, 2000). As a process, supervision is concerned with "the interaction of supervision participants, who reciprocally negotiate, shape, and define the nature of their relationship...and as a relationship, supervision functions as the context within which the supervisor-supervisee interactions unfold" (Chen & Bernstein, 2000, pp. 485). Many studies of interpersonal relationships such as the one between a student and supervisor have examined one or both members in the relationship in an attempt to understand the exact nature of the relationship. However, to the knowledge of the researcher, previous

studies have only examined supervisors and/or students separately and not as a dyad in graduate education. It has been suggested that two-person relationships should be studied at the level of the dyad as well as at the level of the individual if the relationship is to be fully understood (Gonzalez & Griffin, 1999). A dyadic relationship is essentially a two-person group (McCall & Simmons, 1991). In this case the two-person group involves a supervisor and a student.

Procedure

The names of the graduate students convocating in November 2000 was compiled from the posted convocation list. The researcher attended convocation and distributed survey packages to all graduate students in attendance. Additional packages were sent by campus mail to students who had not attended their graduation ceremony. A total of 305 packages were distributed. Student packages contained the following:

1. A letter describing the study and requesting their participation (Appendix L). The letter included a deadline of December 1st, 2000 for returning the completed survey to the researcher.
2. Two copies of the consent form (Appendix M), agreeing to participate. One copy for their records and one copy returned to the researcher.
3. One copy of the *Graduate Supervisory Relationship Scale - Form B* (Appendix K).
4. A set of clear and explicit instructions for completing the survey.
5. A return envelope addressed to the researcher in the Graduate Division of Educational Research. Packages were returned through campus mail. No postage was required.

All returned surveys from the students were assigned a number for analysis purposes and for matching supervisors with students. The names of the supervisors were obtained from the graduate secretaries in the applicable departments. Supervisor surveys were number coded to match the student they were referring to when completing the survey. In total, 121 supervisor packages were distributed, one for each of the students who had returned completed surveys. Supervisor packages contained the following:

1. A letter describing the study and requesting their participation (Appendix N). The letter included a deadline of January 19th, 2001 for returning the completed survey to the researcher.
2. Two copies of the consent form (Appendix M), agreeing to participate. One copy for their records and one copy returned to the researcher.
3. One copy of the *Graduate Supervisory Relationship Scale - Form A* (Appendix J).
4. A set of clear and explicit instructions for completing the survey.
5. A return envelope addressed to the researcher in the Graduate Division of Educational Research. Packages were returned through campus mail. No postage was required.

CHAPTER FOUR

RESULTS

This chapter presents the results from this study. The chapter is divided into three sections. Section One presents data collected from Phase One, leading to the design of the *Graduate Supervisory Relationship Scale - Form A: Supervisors* and the *Graduate Supervisory Relationship Scale - Form B: Students*. This section addresses research question one:

- 1) What are the most important characteristics of the student-supervisor relationship in graduate education?
 - a) What characteristics do students perceive as important?
 - b) What characteristics do supervisors perceive as important?
 - c) Is there a significant difference between the characteristics students perceive as important and those that supervisors perceive as important?

Section Two presents the results from the inferential analysis addressing research questions two to eleven. The descriptive data collected from the *Graduate Supervisory Relationship Scale - Form A: Supervisors* and the *Graduate Supervisory Relationship Scale - Form B: Students* are presented alongside the associated research question. The research questions addressed in this section are:

- 2) Can the most important characteristics be grouped into more general categories or constructs?

- 3) **Is there a significant relationship between satisfaction with and perceived impact of the characteristics for both students and supervisors?**
- 4) **Is there a significant relationship and/or difference between perceived impact of the characteristics for both students and supervisors?**
- 5) **Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?**
- 6) **Is there a significant relationship between the satisfaction students and supervisors have with individual characteristics and overall satisfaction with the supervisory relationship?**
- 7) **Is there a significant relationship between the overall satisfaction with the supervisory experience and the satisfaction with graduate education?**
- 8) **Is there a significant relationship between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?**
- 9) **Are there significant differences between demographic variables (i.e., gender, age, Faculty) and the satisfaction with the characteristics for both students and supervisors?**
- 10) **Are there significant differences between demographic variables (i.e., age, gender, Faculty) and the perceived impact of the characteristics for both students and supervisors?**
- 11) **Is there a significant difference between why students and supervisors decide to work together?**

Section Three presents qualitative data collected from open-ended questions on the *Graduate Supervisory Relationship Scale - Form A: Supervisors* and the *Graduate Supervisory Relationship Scale - Form B: Students*. Major themes that emerged from the qualitative data are presented.

Data Analysis

The data were analyzed via descriptive and inferential statistics using the statistical software program SPSS 9.0. For all statistical tests, the level of significance was set at $p \leq .05$. Table 3.0 presents a summary of the analysis for each of the research questions.

Table 3.0 Analysis Summary According to Research Questions

Research Question	Analysis
<p>1) What are the most important characteristics of the student-supervisor relationship in graduate education?</p> <p>a) What characteristics do students perceive as important?</p> <p>b) What characteristics do supervisors perceive as important?</p> <p>c) Is there a significant difference between the characteristics students perceive as important and those that supervisors perceive as important?</p>	<p>Mean criterion of 4.00 on importance scale combined with content analysis of the interviews.</p> <p>Series of 2-tailed t-tests</p>
<p>2) Can the most important characteristics be grouped into more general categories or constructs?</p>	<p>Principal Axis Factoring</p>
<p>3) Is there a significant relationship between satisfaction with and perceived impact of the characteristics for both students and supervisors?</p>	<p>Pearson Correlations</p>
<p>4) Is there a significant relationship and/or difference between perceived impact of the characteristics for both students and supervisors?</p>	<p>Pearson Correlation by Dyad</p> <p>Series of paired samples t-tests</p>
<p>5) Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?</p>	<p>Paired samples t-test</p>
<p>6) Is there a significant relationship between the satisfaction students and supervisors have with individual characteristics and overall satisfaction with the supervisory relationship?</p>	<p>Linear Regression Analysis</p>
<p>7) Is there a significant relationship between the overall satisfaction with the supervisory experience and the satisfaction with graduate education?</p>	<p>Pearson Correlation</p>
<p>8) Is there a significant relationship between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?</p>	<p>Point-biserial Correlations and Pearson Correlations</p>
<p>9) Are there significant differences between demographic variables (i.e., gender, age, Faculty) and the satisfaction with the characteristics for both students and supervisors?</p>	<p>Series of 2-tailed t-tests and ANOVA's</p>
<p>10) Are there significant differences between demographic variables (i.e., age, gender, Faculty) and the perceived impact of the characteristics for both students and supervisors?</p>	<p>Series of 2-tailed t-tests and ANOVA's</p>
<p>11) Is there a significant difference between why students and supervisors decide to work together?</p>	<p>Series of Paired Samples t-tests</p>

Section One

Research Question One

What are the most important characteristics of the student-supervisor relationship in graduate education?

- a) What characteristics do students perceive as important?
- b) What characteristics do supervisors perceive as important?
- c) Is there a significant difference between the characteristics students perceive as important and those that supervisors perceive as important?

The Most Important Characteristics Identified from Phase One

As previously mentioned in Chapter Three, the researcher generated a pool of descriptive items for each of the characteristics identified as important from the content analysis of transcribed interviews and the *List of Supervisory Characteristics*.

Using a mean of 4.00 or greater as a criterion, the most important characteristics in the student-supervisory relationship were identified. The final survey consisted of 16 items measuring supervisor characteristics (subscale 3), 2 items measuring characteristics of supervision (subscale 4), and 11 items measuring student characteristics (subscale 5). Student and supervisor means and standard deviations for these final items are presented in Table 2.0. In addition, Table 2.0 includes the associated descriptors from the *List of Supervisory Characteristics*, and transcribed comments from the interviews supporting the importance of each item. The means for these items ranged from 4.00 to 5.00 indicating 'important' to 'very important' in the relationship. Items without associated descriptors were generated based only on comments from the interviews. However their importance was validated after meeting the mean criterion of 4.00.

Both students and supervisors identified the same characteristics as being the most important in the student-supervisory relationship. Two-tailed t-tests were calculated for each of the items in Table 4.0 to determine if there were statistically significant differences between student ratings of importance and supervisor ratings of importance. There were no significant differences between the two groups.

Table 4.0 The Most Important Characteristics of Supervision Identified from the Pilot Test and Interviews

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
Subscale 3:				
Supervisor was easily accessible (by phone, email or in person)	4.80 (.4216)	4.60 (.5164)	Accessible Available	<u>Student:</u> "Ineffective supervision would be described as unavailable. I never knew where to find him or how to contact him." <u>Supervisor:</u> "Being available to students is important."
Supervisor returned messages promptly	4.50 (.5270)	4.40 (.6992)	Prompt	<u>Student:</u> "Knowing how to contact them is one thing but sometimes they don't seem to care because they call back a week later. Meanwhile I was left hanging with an important question. Sometimes I asked the secretary if they received my message and realized they had several days earlier. Or I would put acknowledge on my email and know he had read it. This can be so frustrating."
Supervisor discussed expectations at the beginning of my program	4.50 (.5270)	4.40 (.8433)		<u>Student:</u> "I wish my supervisor had told me what to expect at the beginning of my program." <u>Student:</u> "My supervisor discussed his expectations at the beginning of my program. This helped me plan and kept me focused. It also helped motivate me." <u>Supervisor:</u> "Saying hello to students but not laying out clear objectives and expectations in the beginning. You have to be clear on what you expect or students will flounder."
Supervisor's schedule could accommodate the demands of supervision	4.70 (.4830)	4.50 (.5270)	Available	<u>Student:</u> "My supervisor gave me the least amount of time as possible. His schedule could not accommodate supervision." <u>Supervisor:</u> "Times have changed. We have so many other jobs now as well as teaching and research. There have been so many cut backs that it is hard for the few supervisors to supervise all the students. Too heavy a load now."

Table 4.0 continued

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
Supervisor was available to discuss academic issues	4.80 (.4216)	4.80 (.4216)	Available	Student: "A person who listens and is there in an academic sense. At the intellectual level, listening is essential." Supervisor: "Failed communication and inability to discuss academic issues would be an example of ineffective supervision."
Supervisor was supportive of my academic problems	4.70 (.4830)	4.40 (.8433)	Supportive	Student: "I would not describe my supervisory relationship as ideal. I was left on my own entirely, with little academic support." Student: "My supervisor was very supportive of any professional and academic problems that came up."
Supervisor believed in my ability	4.70 (.4830)	4.00 (1.633)		Student: "He believed more than I did sometimes that I was capable of completing the thesis and succeeding. This was crucial. They need to show you they believe in you." Supervisor: "Some students especially the females I have supervised and please no offence to you, but they need pats on the back all the time. They want to be told you have faith in their ability."
Supervisor provided guidance on my research topic	4.80 (.4216)	4.70 (.4830)	Gives Guidance	Student: "My supervisor was ineffective. He did not provide guidance on my research topic and therefore I spent an entire year trying to find something to study. What a waste of time." Supervisor: "Students need guidance. Some more than others but they all need some guidance whether it's on the topic or the writing or whatever."
Supervisor provided guidance on research proposal writing	4.60 (.5164)	4.80 (.4216)	Gives Guidance	Student: "My supervisor was a guide for me. Constant guidance every time I went off track. This was important." Supervisor: as above

Table 4.0 continued

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
Supervisor provided guidance on thesis/dissertation writing	4.70 (.6749)	5.00 (.0000)	Gives Guidance	Student: as above. Same comments as previous item. Supervisor: "Some students need extreme guidance and sometimes you have to provide this."
Supervisor provided constructive criticism/feedback on the quality of my research proposal	4.80 (.4216)	4.70 (.4830)	Gives Feedback	Student: "My supervisor was great. She provided me with constructive criticism throughout the entire process."
Supervisor provided constructive criticism/feedback on the quality of my thesis/dissertation	4.80 (.4216)	4.80 (.4216)	Gives Feedback	Student: "Giving feedback can mean several things. I think the most important would be feedback on the thesis." Student: "Ineffective would be providing poor feedback or negative feedback without realizing the effect the feedback is having on the student. A supervisor needs to know how much feedback to give. A student can only take so much at once. The feedback shouldn't be negative, only constructive." Supervisor: "It's up to the supervisor to ensure the world will understand the thesis, therefore imperative to provide feedback and criticism when needed. The thesis is just as much about the supervisor as it is about the student."
Supervisor was open to ideas about the direction of my research	4.70 (.4830)	4.60 (.5164)	Open to Ideas	Student: "An effective supervisor is one who is open to ideas. They can be so over-attached to their own ideas. No flexibility in terms of topic. Supervisors have big egos and they push their ideas too much. An example would be: Oh, you don't want to read that or agree with him."

Table 4.0 continued

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
Supervisor was knowledgeable about my research topic	4.20 (.7888)	4.50 (.5270)	Knowledgeable	<p><u>Student:</u> "My supervisor knew my topic inside out. This helped because I was just learning." <u>Supervisor:</u> "If a supervisor doesn't understand the student's topic then it is sure to be a disaster." <u>Supervisor:</u> "You have to be an expert in the students topic."</p>
Supervisor encouraged me to apply for scholarships	4.60 (.5164)	4.40 (.6992)	Encouraging	<p><u>Student:</u> "My supervisor encouraged me to apply for scholarships and funding. This was important because there was no money for graduate students. I would not have been able to stay in grad school without the money" <u>Supervisor:</u> "It is the supervisors role to facilitate funding. To encourage the student to go after scholarships etc..."</p>
Supervisor wrote letters of support for me (e.g. scholarships, career opportunities)	4.90 (.3162)	4.30 (.8233)	Supportive	<p><u>Student:</u> "A good supervisor writes good letters for you. Not the superficial letters that put you in the same category as all other grad students."</p>
Subscale 4:				
Regular meetings were scheduled during proposal generation/writing stages	4.50 (.5270)	4.40 (.6992)	Frequent Meetings during Proposal, Candidacy, and Thesis	<p><u>Student:</u> "I don't think frequent meetings is the way to describe it. Frequent can mean constant and I did not need that. I would prefer this to say regular meetings. I appreciated regular meetings to check on my progress and keep me on track." <u>Supervisor:</u> "Supervisors have to have regular meetings with students because some of the best get turned off in the middle and it's better if you can see that coming and get them motivated again."</p>
Scheduled meetings were of adequate length to accomplish necessary tasks	4.50 (.5270)	4.20 (.6325)	Organised Focused	<p><u>Student:</u> "My supervisor made our meetings look like a chore. He rushed them and focused on other things while I was talking, like opening mail and answering the phone. Then he would say 'well carry on'."</p>

Table 4.0 continued

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
Subscale 5:				
Student was easily accessible (by phone, email, or in person)	4.40 (.5164)	4.50 (.5270)	Accessible	Student: "I wasn't easily accessible and I think this annoyed my supervisor sometimes. But I had a job and a family as well as school work." Supervisor: "I'm glad you have student accessibility here because we need to be able to find them too."
Students schedule could accommodate the demands of graduate school	4.50 (.5270)	4.50 (.7071)	Organised and Time-Managed	Student: "This is so important because students are very busy compared to 25 years ago. We have families to support so we have to work. It's important to be able to juggle it all." Supervisor: "Successful students are focused on their studies. My most recent relationships have not been as successful as previous ones because students have changed. They have families and jobs and all this other stuff. Students should come to grad school ready to take it all on. These other responsibilities get in the way." Supervisor: "Students used to be single and now they want to go home at 4:30 to be with family or to let the wife out. Supervision is harder than it was in the sixties because students have dual roles."
Student's ability to meet appropriate deadlines	4.60 (.5164)	4.80 (.4216)	Organised and Time-Managed	Supervisor: "Good experiences involve students who can get things done when they say they will. Being able to meet deadlines."

Table 4.0 continued

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
The respect this student had for my privacy on personal issues	4.20 (.6325)	4.50 (.7071)		Supervisor: "A bad experience I had involved a student who talked too much to other students and to my colleagues. I once confided something and within a couple of days everyone knew what I had said. We worked it out but I never trusted the student again in that respect."
Student's enthusiasm about their research	4.60 (.6992)	4.80 (.4216)	Enthusiastic	Student: "This is a great characteristic because you have to be enthused otherwise you will never get through. You have to like what you are doing." Supervisor: "I loved working with the enthusiastic students. They get so excited about their research that it motivates you to get excited about your research."
Student's attitude about their studies	4.50 (.7071)	4.60 (.5164)	Positive	Supervisor: "I've heard horror stories from other professors who have worked with students who can't shake a negative attitude. They complain about everything. They should be positive about their work." Supervisor: "Student attitude is everything. It's hard to work with students who have 'an attitude' if you know what I mean."
Student's competence to undertake a research project	4.30 (.8223)	4.60 (.5164)	Competent	Student: "Competence is important. I think I felt incompetent at times. I often questioned whether my supervisor felt I was competent." Supervisor: "It's a pleasure to work with competent and gifted students. They help make the relationship successful."

Table 4.0 continued

Survey Item (Characteristic)	Student Means and Standard Deviations (n = 10)	Supervisor Means and Standard Deviations (n = 10)	Associated Descriptor from <i>List of Supervisory Characteristics</i>	Supporting Interview Comments
Student's willingness to seek new information by reading additional resources	4.50 (.5270)	4.40 (.6992)	Questioning	<u>Supervisor:</u> "Students need to be independent and go after new information. We can't constantly tell them what to read and where to find it."
Student's willingness to share authorship on joint projects	4.40 (.6992)	4.50 (.5270)		<u>Supervisor:</u> "Students will argue over authorship. This can be so difficult and often requires intervention from the Dean."
Student's motivation to complete their program on time	4.60 (.5164)	4.40 (.5164)	Motivated	<u>Student:</u> "The most important characteristic for me was my own determination and motivation to get through." <u>Supervisor:</u> "My best experiences have been with students who are motivated and want to learn. Some apply to get in but are not motivated." <u>Supervisor:</u> "Students are taking too long to finish. The length of time they are taking is ridiculous. It should only take 2 years for a master's degree and no more than 5 years for a PhD. Seven or eight years is ridiculous. This is not always the student's fault. Supervisors have to push them and keep them motivated."
Student's willingness to admit mistakes	4.50 (.5270)	4.50 (.5270)	Accepts Criticism	<u>Student:</u> "Being able to accept criticism means being able to admit you weren't on the right track. In other words, you messed up. Admitting mistakes is hard but it's important if you want to grow." <u>Supervisor:</u> "I had a wonderful experience with this particular student who could handle feedback and criticism. He didn't take it as an attack. We are there to find their mistakes and help them through it. They need to be able to handle this."

Section Two

Research Question Two

Can the most important characteristics be grouped into more general categories or constructs?

Factor analysis is a technique that is used to indicate whether or not the various items on a survey can be grouped into a few clusters reflecting a different construct (Streiner, 1994). It was initially intended that an exploratory factor analysis would be performed on the 18 items measuring student satisfaction with Supervisor Characteristics and Characteristics of Supervision and on the 11 items measuring supervisor satisfaction with Student Characteristics to determine the existence of an underlying factor structure. However, the small sampling of supervisors ($n = 43$) was inadequate to justify a factor analysis of the satisfaction with the Student Characteristics. The sample of students ($n = 121$) was sufficient to employ a factor analysis on the Supervisor Characteristics (Subscale 3) and Characteristics of Supervision (Subscale 4).

A principal components analysis was initially performed on the 18 items. Five factors meeting the eigenvalue-one rule were extracted. However, three of the factors contained fewer than three variables and according to Streiner (1994), factors should be comprised of a minimum of three variables otherwise the factor should be discarded. The researcher therefore decided to employ a common factor analysis (principal axis factoring) with oblique rotation and requested a two-factor solution. Oblique rotation was selected because the correlation between the two factors was considered to be moderate to high ($r = -.499$). The eigenvalues for the two extracted factors were 7.741

and 2.061, together accounting for 54.5% of the total variance. Factor loadings from this factor analysis are presented in Table 5.0.

Table 5.0 **Principal Axis Factoring: Two-Factor Solution**

Variables	Factors	
	1	2
Supervisor was easily accessible (by phone, email or in person)	.873	
Supervisor returned messages promptly	.717	
Supervisor discussed expectations at the beginning of my program		-.472
Supervisor's schedule could accommodate the demands of supervision	.568	
Supervisor was available to discuss academic issues	.639	
Supervisor was supportive of my academic problems	.449	
Supervisor believed in my ability	.314	-.401
Supervisor provided guidance on my research topic		-.415
Supervisor provided guidance on research proposal writing		-.644
Supervisor provided guidance on thesis/dissertation writing		-.932
Supervisor provided constructive criticism/feedback on the quality of my research proposal		-.865
Supervisor provided constructive criticism/feedback on the quality of my thesis/dissertation		-.860
Supervisor was open to ideas about the direction of my research	.332	
Supervisor was knowledgeable about my research topic		-.419
Supervisor encouraged me to apply for scholarships	.564	
Supervisor wrote letters of support for me (e.g. scholarships, career opportunities)	.471	
Regular meetings were scheduled during proposal generation/writing stages	.815	
Scheduled meetings were of adequate length to accomplish necessary tasks	.778	

Ten variables loaded on the first factor and six variables loaded on the second factor. The only variable to obtain a substantive loading on both factors was 'supervisor's belief in student's ability". Factor 1 was assigned the name *Supervision Structure* because characteristics loading highly on this factor reflected the management and organization of the relationship (availability, academic support and flexibility). Factor 2 was given the name *Supervisor Expertise* because characteristics loading on this factor reflected the knowledge and expertise of the supervisor and the extent to which he/she used this knowledge to guide the student (expectations, guidance, feedback, and knowledge). The characteristic "belief in student's ability' was reflected in both factors.

The high correlation between the Factors indicates the two dimensions of *Supervision Structure* and *Supervisor Expertise* are related. Essentially, supervisors who do one well also seem to do the other well.

Research Question Three

Is there a significant relationship between satisfaction with and perceived impact of the characteristics for both students and supervisors?

Student participants' were asked to rate their satisfaction with Supervisor Characteristics (Subscale 3) and Characteristics of Supervision (Subscale 4) whereas supervisors were asked to rate their satisfaction with Student Characteristics (Subscale 5). Both were asked to rate the perceived impact of the characteristic on the supervisory relationship, the student's studies and/or final degree outcome. Research question three examined the relationship between satisfaction and perceived impact for student

responses on Subscales 3 and 4 and the relationship between satisfaction and perceived impact for supervisor responses on Subscale 5.

Student Responses to Subscales 3 and 4

The results of how students responded to the items measuring satisfaction with and impact of Supervisor Characteristics (Subscale 3) and Characteristics of Supervision (Subscale 4) are presented in Table 6.0. Table 7.0 presents the Pearson Product-Moment Correlation coefficients between satisfaction and perceived impact for these same characteristics.

All items on Subscale 3 (Supervisor Characteristics) showed a statistically significant positive correlation between student satisfaction with the supervisor characteristic and perceived impact of the characteristic on the supervisory relationship, the student's studies and/or the final degree outcome.

The two items on Subscale 4 (Characteristics of Supervision) also showed a statistically significant positive correlation between student satisfaction and perceived impact of the characteristic on the supervisory relationship, the student's studies and/or the final degree outcome.

Supervisor Responses to Subscale 5

The results of how supervisors responded to the items measuring satisfaction with and impact of Student Characteristics (Subscale 5) are presented in Table 8.0. Table 9.0 presents the Pearson Product-Moment Correlation coefficients between satisfaction and perceived impact for these same characteristics.

All items on Subscale 5 (Student Characteristics) showed a statistically significant positive correlation between supervisor satisfaction with the student characteristic and

perceived impact of the characteristic on the supervisory relationship, the student's studies and/or the final degree outcome.

Table 6.0
Student Satisfaction and Impact Ratings on Subscale 3: Supervisor Characteristics and Subscale 4: Characteristics of Supervision

Satisfaction Ratings:
 1 = Very Dissatisfied
 2 = Dissatisfied
 3 = Neither Satisfied nor Dissatisfied
 4 = Satisfied
 5 = Very Satisfied

Impact Ratings:
 1 = Very negative Impact
 2 = Negative Impact
 3 = No Impact
 4 = Positive Impact
 5 = Very Positive Impact

Item/Characteristic	Satisfaction (n = 121)					Impact (n = 121)				
	1 %	2 %	3 %	4 %	5 %	1 %	2 %	3 %	4 %	5 %
Subscale 3:										
1. Supervisor was easily accessible (by phone, email or in person)	4.1	20.7	4.1	30.6	40.5	4.1	19.0	10.7	36.4	29.8
2. Supervisor returned messages promptly	2.5	22.3	11.6	25.6	38.0	5.0	15.7	18.2	30.6	30.6
3. Supervisor discussed expectations at the beginning of my program	3.3	29.8	13.2	29.8	24.0	3.3	16.5	32.2	31.4	16.5
4. Supervisor's schedule could accommodate the demands of supervision	9.1	24.8	12.4	29.8	24.0	8.3	22.3	19.0	31.4	19.0
5. Supervisor was available to discuss academic issues	0	17.4	17.4	40.5	24.8	1.7	14.0	20.7	40.5	23.1
6. Supervisor was supportive of my academic problems	2.5	8.3	14.9	47.9	26.4	2.5	6.6	19.8	45.5	25.6
7. Supervisor believed in my ability	3.3	5.8	10.7	32.2	47.9	2.5	7.4	11.6	31.4	47.1
8. Supervisor provided guidance on my research topic	5.0	14.0	20.7	31.4	28.9	0	14.0	26.4	33.1	26.4
9. Supervisor provided guidance on research proposal writing	1.7	15.7	17.4	43.8	21.5	0.8	10.7	26.4	42.1	19.8
10. Supervisor provided guidance on thesis/dissertation writing	4.1	14.0	24.8	32.2	24.8	2.5	8.3	33.1	32.2	24.0

Table 6.0 continued

Item/Characteristic	Satisfaction (n = 121)					Impact (n = 121)				
	1 %	2 %	3 %	4 %	5 %	1 %	2 %	3 %	4 %	5 %
11. Supervisor provided constructive criticism/feedback on the quality of my research proposal	2.5	14.9	12.4	43.0	27.3	2.5	7.4	25.6	38.8	25.6
12. Supervisor provided constructive criticism/feedback on the quality of my thesis/dissertation	2.5	14.0	16.5	33.9	33.1	2.5	10.7	22.3	38.8	25.6
13. Supervisor was open to ideas about the direction of my research	0.8	5.8	10.7	37.2	45.5	0.8	5.0	17.4	40.5	36.4
14. Supervisor was knowledgeable about my research topic	4.1	9.1	9.9	26.4	50.4	1.7	9.1	14.0	31.4	43.8
15. Supervisor encouraged me to apply for scholarships	5.8	20.7	37.2	24.8	11.6	0	26.4	42.1	19.0	12.4
16. Supervisor wrote letters of support for me (e.g. scholarships, career opportunities)	2.5	9.9	27.3	35.5	24.8	0.8	9.9	34.7	32.2	22.3
Subscale 4:										
17. Regular meetings were scheduled during proposal generation/writing stages	8.3	17.4	20.7	37.2	16.5	6.6	14.0	26.4	38.0	14.9
18. Scheduled meetings were of adequate length to accomplish necessary tasks	7.4	9.1	18.2	46.3	19.0	5.0	8.3	24.8	46.3	15.7

Table 7.0 Correlations between Perceived Student Satisfaction and Perceived Student Impact for Items 1 - 18 on Subscales 3 and 4.

Item/Characteristic	Pearson Correlation between Satisfaction with and Impact of the Characteristic
1. Supervisor was easily accessible (by phone, email or in person)	.924**
2. Supervisor returned messages promptly	.931**
3. Supervisor discussed expectations at the beginning of my program	.853**
4. Supervisor's schedule could accommodate the demands of supervision	.929**
5. Supervisor was available to discuss academic issues	.890**
6. Supervisor was supportive of my academic problems	.934**
7. Supervisor believed in my ability	.936**
8. Supervisor provided guidance on my research topic	.895**
9. Supervisor provided guidance on research proposal writing	.919**
10. Supervisor provided guidance on thesis/dissertation writing	.881**
11. Supervisor provided constructive criticism/feedback on the quality of my research proposal	.903**
12. Supervisor provided constructive criticism/feedback on the quality of my thesis/dissertation	.912**
13. Supervisor was open to ideas about the direction of my research	.865**
14. Supervisor was knowledgeable about my research topic	.909**
15. Supervisor encouraged me to apply for scholarships	.867**
16. Supervisor wrote letters of support for me (e.g. scholarships, career opportunities)	.903**
17. Regular meetings were scheduled during proposal generation/writing stages	.931**
18. Scheduled meetings were of adequate length to accomplish necessary tasks	.928**

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

Table 8.0 **Supervisor Satisfaction and Impact Ratings on Subscale 5: Student Characteristics**

Satisfaction Ratings:

- 1 = Very Dissatisfied
 2 = Dissatisfied
 3 = Neither Satisfied nor Dissatisfied
 4 = Satisfied
 5 = Very Satisfied

Impact Ratings:

- 1 = Very negative Impact
 2 = Negative Impact
 3 = No Impact
 4 = Positive Impact
 5 = Very Positive Impact

Item/Characteristic	Satisfaction (n = 43)					Impact (n = 43)				
	1 %	2 %	3 %	4 %	5 %	1 %	2 %	3 %	4 %	5 %
Subscale 5:										
1. Student was easily accessible (by phone, email, or in person)	2.3	4.7	4.7	46.5	41.9	2.3	2.3	7.0	62.8	25.6
2. Students schedule could accommodate the demands of graduate school	4.7	18.6	2.3	37.2	37.2	2.3	18.6	4.7	51.2	23.3
3. Student's ability to meet appropriate deadlines	2.3	9.3	9.3	32.6	46.5	0	9.3	9.3	46.5	34.9
4. The respect this student had for my privacy on personal issues	0	7.0	39.5	27.9	25.6	0	7.0	53.5	20.9	18.6
5. Student's enthusiasm about their studies	0	9.3	7.0	34.9	48.8	0	9.3	7.0	41.9	41.9
6. Student's attitude about their studies	0	14.0	0	32.6	53.5	0	11.6	7.0	30.2	51.2
7. Student's competence to undertake a research project	0	9.3	9.3	39.5	41.9	0	11.6	7.0	44.2	37.2
8. Student's willingness to seek new information by reading additional resources	0	7.0	4.7	39.5	48.8	0	4.7	7.0	46.5	41.9
9. Student's willingness to share authorship on joint projects	0	0	58.1	18.6	23.3	0	0	65.1	20.9	14.0
10. Student's motivation to complete their program on time	4.7	14.0	4.7	30.2	46.5	2.3	11.6	9.3	37.2	39.5
11. Student's willingness to admit mistakes	2.3	11.6	4.7	44.2	37.2	2.3	9.3	11.6	53.5	23.3

Table 9.0
Correlations between Perceived Supervisor Satisfaction and Perceived Impact for
Items 1 - 11 on Subscale 5.

Item/Characteristic	Pearson Correlation between Satisfaction with and Impact of the Characteristic
1. Student was easily accessible (by phone, email, or in person)	.795**
2. Student's schedule could accommodate the demands of graduate school	.891**
3. Student's ability to meet appropriate deadlines	.869**
4. The respect this student had for my privacy on personal issues	.812**
5. Student's enthusiasm about their studies	.935**
6. Student's attitude about their studies	.955**
7. Student's competence to undertake a research project	.963**
8. Student's willingness to seek new information by reading additional resources	.935**
9. Student's willingness to share authorship on joint projects	.820**
10. Student's motivation to complete their program on time	.937**
11. Student's willingness to admit mistakes	.889**

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

Research Question Four

Is there a significant relationship and/or difference between perceived impact of the characteristics for both students and supervisors?

Both students and supervisors within a dyad relationship were requested to rate the perceived impact of each characteristic on the supervisory relationship, the student's studies and/or the student's final degree outcome. Research question four examined whether each member of the dyad (student and supervisor) perceived the experience the same or differently.

Table 10.0 presents the distribution of responses for each of the items as well as the correlation coefficients and the associated p-values. Table 11.0 presents the results of the paired samples t-tests performed to examine whether a significant difference existed between the perceived impact for both students and supervisors.

Where significant differences in perceived impact occurred (7 items), one-way ANOVA's were performed with students versus supervisor as the independent variable to determine effect size (Cohen' d). ANOVA results and effect size values are presented in Table 12.0.

Table 10.0 Student and Supervisor Dyad Responses and Correlation Coefficients to Impact Ratings on Subscales 3, 4 and 5

Impact Ratings:
 1 = Very Negative Impact
 2 = Negative Impact
 3 = No Impact
 4 = Positive Impact
 5 = Very Positive Impact

ST = Student Responses
 SU = Supervisor Responses

Item	Impact (n = 43 Student/Supervisor Dyads)										Mean (s.d.)		Pearson r	P value
	1 %		2 %		3 %		4 %		5 %					
	ST	SU	ST	SU	ST	SU	ST	SU	ST	SU	ST	SU		
Subscale 3:														
1. Supervisors' availability by phone, email or in person	4.7	0	11.6	0	9.3	2.3	41.9	65.1	32.6	32.6	3.86 (1.15)	4.30 (.51)	.316*	.039
2. Supervisors' promptness in returning messages	2.3	0	9.3	2.3	16.3	4.7	37.2	69.8	34.9	23.3	3.93 (1.06)	4.14 (.60)	.391**	.009
3. Supervisor discussed expectations at beginning of student's program	0	0	25.6	4.7	20.9	34.9	32.6	41.9	20.9	18.6	3.49 (1.10)	3.74 (.82)	.406**	.007
4. Supervisors' schedule could accommodate demands of supervision	2.3	0	23.3	14.0	14.0	11.6	34.9	62.8	25.6	11.6	3.58 (1.18)	3.72 (.85)	.590**	.000
5. Supervisors' availability to discuss academic issues	0	0	11.6	4.7	23.3	0	34.9	53.5	30.2	41.9	3.84 (1.00)	4.33 (.71)	.210	.177
6. Supervisors' support of student's academic problems	2.3	2.3	2.3	2.3	23.3	11.6	34.9	41.9	37.2	41.9	4.02 (.96)	4.19 (.91)	-.005	.974
7. Supervisors' belief in student's ability	0	0	7.0	0	4.7	2.3	32.6	39.5	55.8	58.1	4.37 (.87)	4.56 (.55)	.352*	.021
8. Supervisors' guidance on research topic	0	0	11.6	0	27.9	11.6	30.2	48.8	30.2	39.5	3.79 (1.01)	4.28 (.67)	.335*	.028

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

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

Table 10.0 continued

Item	Impact (n = 43 Student/Supervisor Dyads)												Mean	Pearson r	P value		
	1 %		2 %		3 %		4 %		5 %		ST	SU					
	ST	SU	ST	SU	ST	SU	ST	SU	ST	SU							
Subscale 3: cont'd																	
9. Supervisors' guidance on research proposal	0	0	11.6	2.3	25.6	9.3	37.2	48.8	25.6	39.5	3.77 (.97)	4.26 (.73)	.154	.325			
10. Supervisors' guidance on thesis/dissertation	2.3	0	4.7	0	27.9	9.3	34.9	46.5	30.2	44.2	3.86 (.99)	4.35 (.65)	.262	.089			
11. Supervisors' constructive criticism/feedback on quality of research proposal	2.3	0	9.3	0	14.0	9.3	41.9	55.8	32.6	34.9	3.93 (1.03)	4.26 (.62)	.177	.256			
12. Supervisors' constructive criticism/feedback on quality of thesis/dissertation	2.3	2.3	7.0	0	16.3	11.6	41.9	53.5	32.6	32.6	3.95 (1.00)	4.14 (.80)	.305*	.047			
13. Supervisors' openness to ideas about direction of research	2.3	0	0	0	18.6	16.3	41.9	34.9	37.2	48.8	4.12 (.88)	4.33 (.75)	.195	.210			
14. Supervisors' knowledge of research topic	2.3	0	11.6	2.3	14.0	9.3	23.3	37.2	48.8	51.2	4.05 (1.15)	4.37 (.76)	.443**	.003			
15. Supervisors' encouragement to apply for scholarships	0	2.3	20.9	4.7	44.2	58.1	14.0	20.9	20.9	14.0	3.35 (1.04)	3.40 (.88)	.392**	.009			
16. Supervisors' letters of support (scholarships, employment)	0	2.3	11.6	0	32.6	32.6	20.9	37.2	34.9	27.9	3.79 (1.06)	3.88 (.91)	.173	.268			
Subscale 4:																	
17. Regular meetings held during proposal writing stages	9.3	0	9.3	0	25.6	23.3	32.6	46.5	23.3	30.2	3.51 (1.22)	4.07 (.74)	.462**	.002			
18. Scheduled meetings were of adequate length to accomplish necessary tasks	7.0	0	4.7	0	23.3	9.3	44.2	51.2	20.9	39.5	3.67 (1.08)	4.30 (.64)	.455**	.002			
Subscale 5:																	
19. Students' availability by phone, email or in person	0	2.3	4.7	2.3	23.3	7.0	46.5	62.8	25.6	25.6	3.93 (.83)	4.07 (.80)	.656**	.000			

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

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

Table 10.0 continued

Item	Impact (n = 43 Student/Supervisor Dyads)										Mean		Pearson r	P value	
	1 %		2 %		3 %		4 %		5 %						
	ST	SU	ST	SU	ST	SU	ST	SU	ST	SU	ST	SU			
Subscale 5: cont'd															
20. Students' schedule could accommodate the demands of graduate school	0	2.3	23.3	18.6	14.0	4.7	32.6	51.2	30.2	23.3	3.70 (1.15)	3.74 (1.09)	.374*	.013	
21. Students' ability to meet appropriate deadlines	0	0	4.7	9.3	11.6	9.3	51.2	46.5	32.6	34.9	4.12 (.79)	4.07 (.91)	.318*	.037	
22. Students' respect for supervisors privacy on personal issues	0	0	4.7	7.0	51.2	53.5	16.3	20.9	27.9	18.6	3.67 (.94)	3.51 (.88)	.319*	.037	
23. Students' enthusiasm about their research	0	0	7.0	9.3	11.6	7.0	30.2	41.9	51.2	41.9	4.26 (.93)	4.16 (.92)	.367*	.016	
24. Students' attitude about their studies	0	0	9.3	11.6	11.6	7.0	30.2	30.2	48.8	51.2	4.19 (.98)	4.21 (1.01)	.343*	.024	
25. Students' competence to undertake a research project	0	0	7.0	11.6	11.6	7.0	41.9	44.2	39.5	37.2	4.14 (.89)	4.07 (.96)	.462**	.002	
26. Students' willingness to seek new information by reading additional resources	0	0	4.7	4.7	7.0	7.0	32.6	46.5	55.8	41.9	4.40 (.82)	4.26 (.79)	-.013	.935	
27. Students' willingness to share authorship on joint projects	0	0	4.7	0	48.8	65.1	34.9	20.9	11.6	14.0	3.53 (.77)	3.49 (.74)	.159	.309	
28. Students' motivation to complete their program on time	2.3	2.3	2.3	11.6	14.0	9.3	32.6	37.2	48.8	39.5	4.23 (.95)	4.00 (1.09)	.530**	.000	
29. Students' willingness to admit mistakes	0	2.3	2.3	9.3	25.6	11.6	41.9	53.5	30.2	23.3	4.00 (.82)	3.86 (.97)	.453**	.002	

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

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

Table 11.0 Paired Samples Test of Difference between Student and Supervisor Responses on Impact Ratings* Statistically significant differences ($p \leq 0.05$) between student and supervisor responses within the dyad

Item/Characteristic	Mean Difference	t	df	Sig. (2-tailed)	Comment
Subscale 3:					
1. Supervisors' availability by phone, email or in person	-.44	-2.64	42	.012*	Supervisors perceived the impact of this characteristic more positively than students did.
2. Supervisors' promptness in returning messages	-.21	-1.39	42	.173	
3. Supervisor discussed expectations at beginning of student's program	-.26	-1.56	42	.125	
4. Supervisors' schedule could accommodate demands of supervision	-.14	-.948	42	.349	
5. Supervisors' availability to discuss academic issues	-.49	-2.91	42	.006*	Supervisors perceived the impact of this characteristic more positively than students did.
6. Supervisors' support of student's academic problems	-.16	-.81	42	.425	
7. Supervisors' belief in student's ability	-.19	-1.43	42	.160	
8. Supervisors' guidance on research topic	-.49	-3.17	42	.003*	Supervisors perceived the impact of this characteristic more positively than students did.
9. Supervisors' guidance on research proposal	-.49	-2.858	42	.007*	Supervisors perceived the impact of this characteristic more positively than students did.
10. Supervisors' guidance on thesis/dissertation	-.49	-3.10	42	.003*	Supervisors perceived the impact of this characteristic more positively than students did.
11. Supervisors' constructive criticism/feedback on quality of research proposal	-.33	-1.93	42	.060	
12. Supervisors' constructive criticism/feedback on quality of thesis/dissertation	.19	1.14	42	.263	
13. Supervisors' openness to ideas about direction of research	-.21	-1.32	42	.193	
14. Supervisors' knowledge of research topic	-.33	-2.01	42	.053	

Table 11.0 continued

Item/Characteristic	Mean Difference	t	df	Sig. (2-tailed)	Comment
15. Supervisors' encouragement to apply for scholarships	-.04	-.29	42	.777	
16. Supervisors' letters of support (scholarships, employment)	-.09	-.48	42	.633	
Subscale 4:					
17. Regular meetings held during proposal writing stages	-.56	-3.33	42	.002*	Supervisors perceived the impact of this characteristic more positively than students did.
18. Scheduled meetings were of adequate length to accomplish necessary tasks	-.63	-4.22	42	.000*	Supervisors perceived the impact of this characteristic more positively than students did.
Subscale 5:					
19. Students' availability by phone, email or in person	.14	1.36	42	.183	
20. Students' schedule could accommodate the demands of graduate school	.04	.24	42	.809	
21. Students' ability to meet appropriate deadlines	-.04	-.31	42	.762	
22. Students' respect for supervisors privacy on personal issues	-.16	-1.00	42	.323	
23. Students' enthusiasm about their research	-.09	-.59	42	.562	
24. Students' attitude about their studies	.02	.13	42	.895	
25. Students' competence to undertake a research project	-.06	-.48	42	.637	
26. Students' willingness to seek new information by reading additional resources	-.14	-.79	42	.429	
27. Students' willingness to share authorship on joint projects	-.04	-.31	42	.756	
28. Students' motivation to complete their program on time	-.23	-1.53	42	.133	
29. Students' willingness to admit mistakes	-.14	-.97	42	.336	

Table 12.0 ANOVA's with Effect Size for Significant Student/Supervisor Differences in Perceived Impact

		Sum of Squares	Df	Mean Square	F	Sig.	Cohen d (effect size)
Supervisor's availability by phone, email or in person	Between Groups	6.591	2	3.296	2.714	0.078	0.399
	Within Groups	48.571	40	1.214			
	Total	55.163	42				
Supervisor's availability to discuss academic issues	Between Groups	1.947	2	0.974	0.976	0.386	0.491
	Within Groups	39.913	40	0.998			
	Total	41.860	42				
Supervisor's guidance on research topic	Between Groups	4.893	2	2.447	2.560	0.090	0.501
	Within Groups	38.223	40	0.956			
	Total	43.116	42				
Supervisor's guidance on research proposal	Between Groups	1.317	3	0.439	0.446	0.721	0.494
	Within Groups	38.358	39	0.984			
	Total	39.674	42				
Supervisor's guidance on thesis/dissertation	Between Groups	2.873	2	1.437	1.501	0.235	0.501
	Within Groups	38.289	40	0.957			
	Total	41.163	42				
Regular meetings held during proposal writing stages	Between Groups	16.963	2	8.482	7.411	0.002	0.523
	Within Groups	45.781	40	1.145			
	Total	62.744	42				
Scheduled meetings were of adequate length to accomplish necessary tasks	Between Groups	12.946	2	6.473	7.094	0.002	0.660
	Within Groups	36.496	40	0.912			
	Total	49.442	42				

Research Question Five

Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?

Overall satisfaction frequencies and descriptives for the dyad data set (student and supervisor pairs, $n = 43$) are presented in Table 13.0. To examine whether a significant difference existed between student overall satisfaction and supervisor overall satisfaction, a paired samples 2-tailed t-test was performed.

Results of the t-test indicated that overall, supervisors were more satisfied with the supervisory relationship than students were $t(42) = -4.627, p = .000$.

Table 13.0 Student and Supervisor Overall Satisfaction with The Supervisory Relationship

Satisfaction Ratings

1 = Very Dissatisfied

2 = Dissatisfied

3 = Neither Satisfied nor Dissatisfied

4 = Satisfied

5 = Very Satisfied

N = 43	Overall Satisfaction					Mean	Standard Deviation
	1 %	2 %	3 %	4 %	5 %		
Student	2.3	14.0	18.6	23.3	41.9	3.88	1.18
Supervisor	0	0	4.7	25.6	69.8	4.65	.57

Research Question Six

Is there a significant relationship between the satisfaction students and supervisors have with individual characteristics and overall satisfaction with the supervisory relationship?

A regression analysis was performed to determine if satisfaction with the individual characteristics could be used as predictor variables for overall satisfaction with the supervisory relationship. For the entire student data set ($n = 121$), satisfaction scores on Subscale 3 (16 Supervisor Characteristics) and Subscale 4 (2 Characteristics of Supervision) were entered as continuous predictor variables, with overall satisfaction as the dependent variable. Table 14.0 presents the model summary and Table 15.0 presents the ANOVA results for student satisfaction with the individual characteristics and overall satisfaction with the supervisory relationship.

Table 14.0 **Model Summary of Satisfaction with Individual Characteristics and Overall Satisfaction with The Supervisory Relationship for Students**

R	R Square	Adjusted R Square	Std. Error of the Estimate
.888	.789	.752	.63

Table 15.0 ANOVA of Satisfaction with Individual Characteristics and Overall Satisfaction with The Supervisory Relationship for Students

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	151.654	18	8.425	21.161	.000
Residual	40.610	102	.398		
Total	192.264	120			

A regression analysis using the 18 variables as predictors of overall satisfaction produced significant results $F(18,102) = 21.16, p = .000$. In particular, three variables accounted for significant unique variance in predicting overall satisfaction with the supervisory relationship. The regression coefficients were all positive and the items were:

- 1) Supervisor's schedule could accommodate the demands of supervision, $t = 1.99, p = .049$ (item 4)
- 2) Supervisor believed in student's ability, $t = 2.55, p = .012$ (item 7)
- 3) Supervisor provided constructive criticism/feedback on the quality of the thesis/dissertation, $t = 2.81, p = .006$ (item 12)

Table 16.0 shows the coefficients and significance of each variable entered in the regression analysis.

Table 16.0 Coefficients of Satisfaction with Individual Characteristics and Overall Satisfaction with The Supervisory Relationship for Students

	Std. Error	Standardized Coefficients	t	Sig.	Correlations	
		Beta			Zero-order	Partial
Constant	0.386		-3.429	0.001		
1. Supervisor was easily accessible (by phone, email or in person)	0.120	0.133	1.102	0.273	0.723	0.108
2. Supervisor returned messages promptly	0.105	0.096	0.922	0.359	0.714	0.091
3. Supervisor discussed expectations at the beginning of my program	0.061	0.103	1.721	0.088	0.546	0.168
4. Supervisor's schedule could accommodate the demands of supervision	0.088	0.184	1.996	0.049	0.697	0.194
5. Supervisor was available to discuss academic issues	0.093	0.036	0.485	0.629	0.660	0.048
6. Supervisor was supportive of my academic problems	0.094	0.072	0.996	0.322	0.628	0.098
7. Supervisor believed in my ability	0.085	0.179	2.551	0.012	0.609	0.245
8. Supervisor provided guidance on my research topic	0.082	0.110	1.433	0.155	0.537	0.140
9. Supervisor provided guidance on research proposal writing	0.099	0.010	0.126	0.900	0.461	0.012
10. Supervisor provided guidance on thesis/dissertation writing	0.114	-0.093	-0.915	0.362	0.546	-0.090
11. Supervisor provided constructive criticism/feedback on the quality of my research proposal	0.114	-0.068	-0.695	0.488	0.583	-0.069
12. Supervisor provided constructive criticism/feedback on the quality of my thesis/dissertation	0.128	0.318	2.812	0.006	0.620	0.268
13. Supervisor was open to ideas about the direction of my research	0.084	0.027	0.446	0.657	0.457	0.044
14. Supervisor was knowledgeable about my research topic	0.069	0.034	0.535	0.594	0.367	0.053
15. Supervisor encouraged me to apply for scholarships	0.082	-0.050	-0.726	0.469	0.229	-0.072
16. Supervisor wrote letters of support for me (e.g. scholarships, career opportunities)	0.085	-0.026	-0.378	0.706	0.298	-0.037
17. Regular meetings were scheduled during proposal generation/writing stages	0.105	0.101	1.030	0.305	0.571	0.101
18. Scheduled meetings were of adequate length to accomplish necessary tasks	0.108	0.043	0.445	0.657	0.623	0.044

For the supervisor data set ($n = 43$), satisfaction scores on Subscale 5 (11 Student Characteristics) were entered as continuous predictor variables, with overall satisfaction as the dependent variable. Table 17.0 presents the model summary and Table 18.0 presents the ANOVA results for supervisor satisfaction with the individual student characteristics and overall satisfaction with the supervisory relationship.

Table 17.0 Model Summary of Satisfaction with Individual Characteristics and Overall Satisfaction with The Supervisory Relationship for Supervisors

R	R Square	Adjusted R Square	Std. Error of the Estimate
.748	.560	.403	.44

Table 18.0 ANOVA of Satisfaction with Individual Characteristics and Overall Satisfaction with The Supervisory Relationship for Supervisors

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.704	11	.700	3.581	.002
Residual	6.063	31	.196		
Total	13.767	42			

A regression analysis using the 11 variables as predictors of overall satisfaction produced significant results $F(11, 31) = 3.581, p = .002$. Specifically, 'student competence to undertake a research project' accounted for unique variance in predicting overall satisfaction, $t = 1.97, p = .048$ (item 7), and the regression coefficient was positive. The item 'student willingness to admit mistakes' (item 11) and overall satisfaction almost reached significance ($p = .061$). Table 19.0 shows the coefficients and significance of each variable entered in the regression analysis.

Table 19.0 Coefficients of Satisfaction with Individual Characteristics and Overall Satisfaction with The Supervisory Relationship for Supervisors

	Std. Error	Standardized Coefficients	t	Sig.	Correlations	
		Beta			Zero-order	Partial
Constant	.574		3.857	.001		
1. Student was easily accessible (by phone, email, or in person)	.121	.101	.523	.605	.461	.094
2. Students schedule could accommodate the demands of graduate school	.113	-.261	-1.052	.301	.417	-.186
3. Student's ability to meet appropriate deadlines	.138	.363	1.398	.172	.571	.244
4. The respect this student had for my privacy on personal issues	.098	.046	.285	.778	.214	.051
5. Student's enthusiasm about their studies	.113	.065	.347	.731	.373	.062
6. Student's attitude about their studies	.158	-.062	-.218	.829	.520	-.039
7. Student's competence to undertake a research project	.108	.350	1.968	.048	.579	.333
8. Student's willingness to seek new information by reading additional resources	.137	.071	.344	.733	.606	.062
9. Student's willingness to share authorship on joint projects	.104	-.075	-.493	.625	.038	-.088
10. Student's motivation to complete their program on time	.097	.043	.206	.838	.472	.037
11. Student's willingness to admit mistakes	.097	.335	1.878	.061	.446	.320

Research Question Seven

Is there a significant relationship between the overall satisfaction with the supervisory experience and the satisfaction with graduate education?

Frequencies and descriptives for student overall satisfaction with the supervisory relationship and satisfaction with graduate education are presented in Table 20.0. To examine whether a significant relationship existed between the overall satisfaction with the supervisory experience and the satisfaction with graduate education, a Pearson Correlation was performed. A significant positive correlation existed between overall satisfaction with the supervisory relationship and satisfaction with graduate education $r = .668$, $p = .000$ (2-tailed).

Table 20.0 Student Overall Satisfaction with The Supervisory Relationship by Satisfaction with Graduate Education

Satisfaction Ratings

1 = Very Dissatisfied

2 = Dissatisfied

3 = Neither Satisfied nor Dissatisfied

4 = Satisfied

5 = Very Satisfied

		Overall Satisfaction with Supervisory Relationship (mean = 3.63, s.d. = 1.27)					Total
		1	2	3	4	5	
Student Satisfaction with Graduate Education (mean = 3.79, s.d. = 0.82)	1						0
	2	5	5	2			12
	3	1	9	8	1		19
	4		8	8	30	26	72
	5		2	1	1	14	18
Total		6	24	19	32	40	121

Research Question Eight

Is there a significant relationship between the overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?

Descriptive data for positive role modeling, and the decision to pursue an academic career are presented in Table 21.0

Table 21.0 Positive Role Modeling and Career Choice Distribution

		Yes	No
Supervisor is considered a positive role model	n	95	26
	%	(78.5)	(21.5)
Student is pursuing an academic career	n	54	67
	(%)	(44.6)	(55.4)

Pearson correlation coefficients were calculated to examine if a significant relationship existed between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career. A significant positive correlation existed between overall satisfaction with the supervisory relationship and positive supervisor role modeling ($r = .644$, $p = .000$). Table 22.0 presents the distribution data.

Table 22.0 Student Overall Satisfaction with The Supervisory Relationship by Positive Supervisor Role Modeling

Satisfaction Ratings

1 = Very Dissatisfied

2 = Dissatisfied

3 = Neither Satisfied nor Dissatisfied

4 = Satisfied

5 = Very Satisfied

		Overall Satisfaction with Supervisory Relationship (mean = 3.63, s.d. = 1.27)					Total
		1	2	3	4	5	
Supervisor is considered a positive role model	No	6	13	6	1		26
	Yes		11	13	31	40	95
Total		6	24	19	32	40	121

The analysis failed to find significant correlations between:

- the decision to pursue an academic career and overall satisfaction with the supervisory relationship ($r = .146$, $p = .110$) and;
- the decision to pursue an academic career and role modeling ($r = .065$, $p = .479$)

Research Question Nine

Are there significant differences between demographic variables (i.e., gender, age, and faculty) and the satisfaction with the characteristics for both students and supervisors?

The results for this research question are divided into two parts. The first part presents the results for student demographic variables and satisfaction with the supervisor characteristics (subscale 3), the characteristics of supervision (subscale 4) and overall satisfaction with the supervisory relationship and graduate education. The second part presents the results for supervisor demographic variables and satisfaction with student characteristics (subscale 5) and overall satisfaction with the supervisory relationship.

Student Demographic Variables and Satisfaction with the Characteristics

Student Degree and Satisfaction

A series of independent samples t-tests were performed on the variables to examine if differences in satisfaction existed between students completing a masters degree and those completing a doctoral degree. No significant differences were found in satisfaction with supervisor characteristics, characteristics of supervision, overall satisfaction with the supervisory relationship or satisfaction with graduate education between the two groups.

Student Gender and Satisfaction

To investigate gender differences in satisfaction with the characteristics, a series of t-tests were performed. Two items were found to have significant mean differences in satisfaction. Table 23.0 presents the two characteristics and descriptive data for the two

groups. Table 24.0 presents the independent t-tests results for the two characteristics by gender.

Table 23.0 Descriptive Statistics for Characteristics with Significant Differences in Satisfaction by Student Gender

Characteristic	Male			Female		
	n	Mean	Std. Dev.	N	Mean	Std. Dev.
Supervisor was Knowledgeable about research topic	48	4.38	.98	73	3.92	1.23
Supervisor wrote letters of support (e.g., scholarships)	48	3.94	.84	73	3.50	1.12

Table 24.0 Independent Samples Tests of Satisfaction on Characteristics with Significant Differences by Student Gender

Characteristic	t	df	Sig. (2-tailed)	Mean Difference
Supervisor was Knowledgeable about research topic	2.157	119	.033	.46
Supervisor wrote letters of support (e.g., scholarships)	2.063	119	.041	.44

Results indicated that males were more satisfied than females with respect to 'supervisor knowledge of research topic' and 'letters of support written by supervisor.' No significant differences were found in overall satisfaction with the supervisory relationship (males = 3.63, s.d = 1.04, females = 3.62, s.d. = 1.40) or graduate education (males = 3.73, s.d. = .76, females = 3.74, s.d. = .85) as a function of student gender.

Student Age and Satisfaction

A series of ANOVA's were performed to examine if significant differences existed between the student age groups and satisfaction with the characteristics. Two items were found to have significant mean differences in satisfaction. Table 25.0 presents the two characteristics and descriptive data for the age groups. Table 26.0 presents the ANOVA results for the two characteristics by age.

Table 25.0 Descriptive Statistics for Characteristics with Significant Differences in Satisfaction by Student Age

Characteristic		Age Groupings						
		<26	26-30	31-35	36-40	41-45	46-50	>50
Supervisor's schedule could accommodate the demands of supervision	n	10	58	21	8	11	7	6
	Mean	3.10	3.14	3.19	3.25	3.43	4.27	4.67
	SD	1.45	1.32	1.21	1.58	1.40	.90	.82
Supervisor was available to discuss academic issues	n	10	58	21	8	11	7	6
	Mean	3.30	3.64	3.81	3.75	3.94	4.18	4.83
	SD	.95	1.00	1.03	1.04	1.21	.87	.41

Table 26.0 ANOVA's of Satisfaction on Characteristics with Significant Differences by Age

		Sum of Squares	df	Mean Square	F	Sig.
Supervisor's schedule could accommodate the demands of supervision	Between Groups	23.657	6	3.943	2.394	.032
	Within Groups	187.764	114	1.647		
	Total	211.421	120			
Supervisor was available to discuss academic issues	Between Groups	14.439	6	2.406	2.459	.028
	Within Groups	111.561	114	.979		
	Total	126.000	120			

An LSD post-hoc examination revealed between which groups the differences in satisfaction existed. For the first characteristic (supervisor's schedule could accommodate the demands of supervision) significant differences in satisfaction occurred between students older than 50 and students in the following age groups: <26 ($p = .020$), 26 - 30 ($p = .006$), 31 - 35 ($p = .014$) and 36 - 40 ($p = .043$). For the same characteristic, significant differences also existed between students in the 46 - 50 age group and students in the following age groupings: <26 ($p = .039$), 26 - 30 ($p = .008$), 31 - 35 ($p = .025$).

For the second characteristic (supervisor was available to discuss academic issues) significant differences in satisfaction were revealed between students older than 50 and students in the following age groupings: <26 ($p = .003$), 26 - 30 ($p = .006$), 31 - 35 ($p = .027$) and 36 - 40 ($p = .045$). For the same characteristic, significant differences also

existed between students in the 46 - 50 age group and students who were under 26 years of age ($p = .044$).

In summary, results indicate that older students (over 46) were more satisfied with supervisor availability in terms of demands of supervision and time to discuss academic issues than younger students were. No significant differences were found in overall satisfaction with the supervisory relationship or graduate education as a function of student age.

Student Faculty and Satisfaction

A series of one-way ANOVA's were performed to examine if significant differences existed between student faculty groups and satisfaction with the characteristics. Eight items were found to have significant mean differences in terms of satisfaction. Table 27.0 presents the eight characteristics and descriptive data for the 12 faculty groups. Table 28.0 presents the ANOVA results for the eight characteristics by faculty.

An LSD post-hoc examination revealed between which groups the differences in satisfaction existed. Table 29.0 summarizes the post-hoc tests.

Table 27.0 Descriptive Statistics for Characteristics with Significant Differences in Satisfaction by Student Faculty

HU = Humanities
EVD = Environmental Design
ED = Education
SS = Social Science

ENG = Engineering
SC = Science
NU = Nursing
SW = Social Work

CC = Communication & Culture
MG = Management
MS = Medical Science
KN = Kinesiology

Characteristic		HU	EVD	ED	SS	CC	MG	ENG	SC	NU	SW	MS	KN
Supervisor was easily accessible (by phone, email, or in person)	n	7	8	24	16	2	2	10	20	8	7	7	10
	mean	4.29	3.38	3.83	4.06	2.50	4.00	3.80	3.05	4.88	4.43	4.86	3.30
	sd	1.11	1.51	1.24	1.12	.71	.00	1.03	1.54	.35	.53	.38	1.42
Supervisor's schedule could accommodate the demands of supervision	mean	3.57	2.80	3.67	3.38	1.50	4.00	2.70	2.60	4.75	4.00	4.14	3.40
	sd	1.13	1.20	1.34	1.26	.71	.00	1.07	1.35	.71	.82	1.07	1.17
Supervisor was available to discuss academic issues	mean	3.57	4.00	3.54	3.81	2.50	4.00	4.10	3.25	4.88	4.00	3.86	3.50
	sd	1.13	.76	1.18	.98	.71	.00	.32	1.12	.35	.82	.38	1.27
Supervisor was knowledgeable about research topic	mean	4.71	3.75	3.75	4.25	1.50	4.00	4.60	4.60	3.50	4.71	4.29	3.30
	sd	.49	1.49	1.26	1.13	.71	.00	.52	.94	.76	.49	.76	1.42
Supervisor encouraged scholarship applications	mean	3.14	3.38	2.71	3.50	2.50	1.50	3.80	3.55	3.50	2.86	3.29	2.40
	sd	1.07	.92	1.04	1.32	.71	.71	.79	.76	.76	.69	.95	1.26
Supervisor wrote letters of support (e.g., scholarships)	mean	3.71	3.75	3.08	3.94	2.50	2.50	4.20	4.05	3.63	3.29	4.09	4.00
	sd	.49	.71	1.21	1.44	.71	.71	.42	.83	.74	.76	.49	.94
Overall satisfaction with the supervisory relationship	mean	3.86	3.38	4.00	4.00	3.00	4.00	4.00	3.35	4.38	4.00	4.14	3.50
	sd	.69	.92	.72	.89	1.41	.00	.57	.88	.52	.00	.38	1.06
Overall satisfaction with graduate education	mean	3.86	3.25	3.54	3.38	1.50	4.50	3.50	2.90	5.00	4.57	4.71	3.70
	sd	1.07	1.49	1.38	1.15	.71	.71	.97	1.07	.00	.53	.49	1.42

Table 28.0 ANOVA's of Satisfaction on Characteristics with Significant Differences by Student Faculty

Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Supervisor was easily accessible (by phone, email, or in person)	Between Groups	41.185	11	3.744	2.647	.005
	Within Groups	154.171	109	1.414		
	Total	195.355	120			
Supervisor's schedule could accommodate the demands of supervision	Between Groups	56.167	11	5.106	3.585	.000
	Within Groups	155.255	109	1.424		
	Total	211.421	120			
Supervisor was available to discuss academic issues	Between Groups	22.508	11	2.046	2.155	.022
	Within Groups	103.492	109	.949		
	Total	126.000	120			
Supervisor was knowledgeable about research topic	Between Groups	41.724	11	3.793	3.472	.000
	Within Groups	119.086	109	1.093		
	Total	160.810	120			
Supervisor encouraged scholarship applications	Between Groups	28.090	11	2.554	2.579	.006
	Within Groups	107.926	109	.990		
	Total	136.017	120			
Supervisor wrote letters of support (e.g., scholarships)	Between Groups	25.308	11	2.301	2.459	.009
	Within Groups	101.982	109	.936		
	Total	127.289	120			
Overall satisfaction with the supervisory relationship	Between Groups	14.820	11	1.347	2.259	.016
	Within Groups	65.014	109	.596		
	Total	79.835	120			
Overall satisfaction with graduate education	Between Groups	53.656	11	4.878	3.836	.000
	Within Groups	138.608	109	1.272		
	Total	192.264	120			

Table 29.0 Summary of Post-Hoc Tests for Student Satisfaction by Faculty

Characteristic	Significant Findings
Supervisor was easily accessible (by phone, email, or in person)	Satisfaction significantly greater in Nursing than in Enviro. Design (p = .013), Education (p = .034), Comm. & Culture (p = .013), Science (p = .000) & Kinesiology (p = .006) Satisfaction significantly greater in Medical Science than in Enviro. Design (p = .018), Comm. & Culture (p = .015), Science (p = .001) & Kinesiology (p = .009)
Supervisor's schedule could accommodate the demands of supervision	Satisfaction significantly greater in Nursing than in Enviro. Design (p = .000), Education (p = .028), Comm. & Culture (p = .001), Social Sc. (p = .009), Science (p = .000), Engineering (p = .000) & Kinesiology (p = .006) Satisfaction significantly greater in Medical Science than in Enviro. Design (p = .009), Comm. & Culture (p = .007), Engineering (p = .010) & Science (p = .004)
Supervisor was available to discuss academic issues	Satisfaction significantly greater in Nursing than in Humanities (p = .011), Education (p = .001), Comm. & Culture (p = .003), Social Sc. (p = .013), Science (p = .000), & Kinesiology (p = .004)
Supervisor was knowledgeable about research topic	Satisfaction significantly greater in Humanities than in Education (p = .034), Comm. & Culture (p = .000), Nursing (p = .027) & Kinesiology (p = .007) Satisfaction significantly greater in Social Work than in Education (p = .034), Comm. & Culture (p = .000), Nursing (p = .027) & Kinesiology (p = .007)
Supervisor encouraged scholarship applications	Means < 3.90 indicating that overall students are not very satisfied with this characteristic, however, students in Engineering are more satisfied than students in Management (p = .004) & Kinesiology (p = .002)
Supervisor wrote letters of support (e.g., scholarships)	Satisfaction significantly greater in Medical Science than in Education (p = .005), Comm. & Culture (p = .023) & Management (p = .023). Satisfaction significantly greater in Engineering than in Education (p = .003), Comm. & Culture (p = .025) & Management (p = .025).
Overall satisfaction with the supervisory relationship	Satisfaction is significantly greater in Nursing than in Enviro. Design (p = .002), Education (p = .002), Comm. & Culture (p = .000), Social Sc. (p = .001), Science (p = .001), Engineering (p = .006) & Kinesiology (p = .017). Satisfaction is significantly greater in Medical Sci. than in Enviro. Design (p = .014), Education (p = .017), Comm. & Culture (p = .001), Social Sc. (p = .010), Science (p = .070), & Engineering (p = .031).
Overall satisfaction with graduate education	Satisfaction significantly greater in Nursing than in Enviro. Design (p = .011), Comm. & Culture (p = .013), Science (p = .000) & Kinesiology (p = .006) Satisfaction significantly greater in Medical Science than in Science (p = .021) & Kinesiology (p = .029)

In summary, students in Nursing had the greatest satisfaction with supervisor accessibility, supervisor availability, overall satisfaction with the supervisory relationship and overall satisfaction with graduate education. The group next most satisfied with these characteristics, were students in Medical Science. The least satisfied with supervisor accessibility, supervisor availability, overall satisfaction with the supervisory relationship and overall satisfaction with graduate education were students in Communication and Culture and students in Science.

Students in Humanities and Social Work were the most satisfied with supervisor knowledge of research topic. Students in Engineering were the most satisfied with the encouragement to apply for scholarships. Finally, students in Medical Science, Engineering and Science were the most satisfied with letters of support.

Student Time to Completion and Satisfaction

Time to completion was examined as a function of degree, to account for the difference in time to complete a doctoral degree compared with a master's degree. Descriptive data are presented in Table 30.0. A series of ANOVA's were performed to determine if differences in satisfaction existed as a function of completion time. No significant differences were found in satisfaction with supervisor characteristics, characteristics of supervision, overall satisfaction with the supervisory relationship or satisfaction with graduate education between the groups.

Table 30.0 Student Degree and Time to Completion Distribution

		Years to Completion							Total	
		< 2	2	3	4	5	6	7		> 7
Masters	n	17	35	30	10	3	0	0	0	95
	(%)	(17.9)	(36.8)	(31.6)	(10.5)	(3.2)	(0)	(0)	(0)	(78.5)
Doctorate	n	0	0	2	12	9	1	2	0	26
	(%)	(0)	(0)	(7.7)	(46.2)	(34.6)	(3.8)	(7.7)	(0)	(21.5)

Supervisor Demographic Variables and Satisfaction with the Characteristics**Supervisor Status and Satisfaction**

A series of one-way ANOVA's were performed to examine if significant differences existed between supervisors at different stages of their career (Assistant, Associate, Full & Emeritus) and satisfaction with student characteristics. No significant differences were found in satisfaction with student characteristics or overall satisfaction with the supervisory relationship as a function of supervisor status.

Supervisor Gender and Satisfaction

To investigate gender differences in supervisor satisfaction with the student characteristics, a series of t-tests were performed. Three items were found to have significant mean differences in satisfaction. Table 31.0 presents the three characteristics and descriptive data for the two groups. Table 32.0 presents the independent t-tests results for the three characteristics by supervisor gender.

Table 31.0 Descriptive Statistics for Characteristics with Significant Differences in Satisfaction by Supervisor Gender

Characteristic	Male			Female		
	n	Mean	Std. Dev.	n	Mean	Std. Dev.
Student's schedule could accommodate demands of graduate School	28	3.54	1.32	15	4.40	.91
Student's attitude about their studies	28	4.00	1.15	15	4.73	.46
Student's motivation to complete their program on time	28	3.57	1.32	15	4.80	.41

Table 32.0 Independent Samples Tests of Satisfaction on Characteristics with Significant Differences by Supervisor Gender

Characteristic	t	df	Sig. (2-tailed)	Mean Difference
Student's schedule could accommodate demands of graduate School	-2.260	41	.029	-.86
Student's attitude about their studies	-2.352	41	.024	-.73
Student's motivation to complete their program on time	-3.503	41	.001	-1.23

Results indicated that female supervisors were significantly more satisfied than male supervisors with student's attitude about their studies, motivation to complete their program on time and ability to accommodate the demands of graduate school. No significant differences were found in overall satisfaction with the supervisory relationship as a function of supervisor gender.

Supervisor Age and Satisfaction

A series of one-way ANOVA's were performed to examine if significant differences existed between supervisors of different ages and satisfaction with student characteristics. No significant differences were found in satisfaction with student characteristics or overall satisfaction with the supervisory relationship as a function of supervisor age.

Supervisor Faculty and Satisfaction

A series of one-way ANOVA's were performed to examine if significant differences existed between supervisor faculty groups and satisfaction with the characteristics. No significant differences were found in satisfaction with student characteristics or overall satisfaction with the supervisory relationship as a function of the supervisor's faculty group.

Years of Supervision Experience and Satisfaction

To investigate the differences in supervisor satisfaction with the student characteristics, as a function of supervisory experience, a series of one-way ANOVA's were performed. Two items were found to have significant mean differences in satisfaction. Table 33.0 presents the two characteristics and descriptive data for the groups. Table 34.0 presents the ANOVA results for the two characteristics.

Table 33.0 Descriptive Statistics for Characteristics with Significant Differences in Satisfaction by Supervision Experience

Characteristic		Years of Supervision Experience						
		<6	6-10	11-15	16-20	21-25	26-30	>30
Student's willingness to seek new information by reading additional resources	n	8	9	6	11	8	1	0
	Mean	4.75	4.56	4.17	3.55	4.75	4.00	
	SD	.46	.53	.75	1.04	.71	0	
Student's motivation to complete their program on time	n	8	9	6	11	8	1	0
	Mean	4.88	4.33	2.50	3.55	4.50	4.00	
	SD	.35	1.00	1.52	1.04	1.07	0	

Table 34.0 ANOVA's of Satisfaction on Characteristics with Significant Differences by Supervision Experience

		Sum of Squares	df	Mean Square	F	Sig.
Student's willingness to seek new information by reading additional resources	Between Groups	10.287	5	2.057	3.663	.009
	Within Groups	20.783	37	.562		
	Total	31.070	42			
Student's motivation to complete their program on time	Between Groups	24.898	5	4.980	4.712	.002
	Within Groups	39.102	37	1.057		
	Total	64.000	42			

Post-hoc tests could not be performed for either characteristic because at least one group had fewer than two cases. However, for the first characteristic (Student's willingness to seek additional information), it appears that supervisors in the middle range of their careers (16 - 20 years of supervision experience) were less satisfied with the student's willingness to seek additional information.

For the second characteristic (student's motivation to complete their program on time), it appears that again, supervisors who were in the middle range of their careers (11 - 20 years of supervision experience) were less satisfied with this student characteristic.

Research Question Ten

Are there significant differences between demographic variables (i.e., gender, age, and faculty) and the perceived impact of the characteristics for both students and supervisors?

The results for this research question are divided into two parts. The first part presents the results for student demographic variables and perceived impact of the characteristics on subscales 3, 4, and 5. The second part presents the results for supervisor demographic variables and perceived impact of the characteristics on the same three subscales.

Student Demographic Variables and Perceived Impact of the Characteristics

Student Degree and Perceived Impact

A series of independent samples t-tests were performed on the variables to examine if differences in perceived impact existed between students completing a masters degree and those completing a doctoral degree. No significant differences were found in perceived impact with

supervisor characteristics, characteristics of supervision, or student characteristics between the two groups.

Student Gender and Perceived Impact

To investigate gender differences in perceived impact of the characteristics, a series of t-tests were performed. One item was found to have a significant mean difference in perceived impact. Table 35.0 presents the characteristic and descriptive data for the two groups. Table 36.0 presents the independent t-test result for the characteristics by gender.

Table 35.0 Descriptive Statistics for The Characteristic with Significant Differences in Perceived Impact by Student Gender

Characteristic	Male			Female		
	n	Mean	Std. Dev.	N	Mean	Std. Dev.
Supervisor was Knowledgeable about research topic	48	4.31	.88	73	3.90	1.12

Table 36.0 Independent Samples Tests of Perceived Impact of Characteristic with Significant Differences by Student Gender

Characteristic	t	df	Sig. (2-tailed)	Mean Difference
Supervisor was Knowledgeable about research topic	2.130	119	.035	.41

The results of this t-test indicate that females appear to be more affected than males by the supervisors' knowledge of the research topic.

From research question three, it was found that a strong significant positive correlation ($r = .909, p < .01$) existed between satisfaction with the supervisors knowledge of research topic and perceived impact of the characteristic on the supervisory relationship, the students studies and/or final degree outcome. In research question nine, it was found that females were less satisfied than males with their supervisors' knowledge of the research topic. Both of the findings from research questions three and nine support the finding from this t-test, indicating that females perceive the impact to be less positive compared to males.

Student Age and Perceived Impact

A series of ANOVA's were performed to examine if significant differences existed between the student age groups and perceived impact of the characteristics. Three items were found to have significant mean differences in perceived impact. Table 37.0 presents the three characteristics and descriptive data for the age groups. Table 38.0 presents the ANOVA results for the three characteristics by age.

Table 37.0 Descriptive Statistics for Characteristics with Significant Differences in Perceived Impact by Student Age

Characteristic		Age Groupings						
		<26	26-30	31-35	36-40	41-45	46-50	>50
Supervisor's schedule could accommodate the demands of supervision	n	10	58	21	8	11	7	6
	Mean	2.88	3.00	3.09	3.43	3.43	4.00	4.67
	SD	1.25	1.41	1.26	1.12	1.12	.89	.82
Supervisor was available to discuss academic issues	n	10	58	21	8	11	7	6
	Mean	3.20	3.53	3.29	3.88	3.91	4.00	4.83
	SD	1.03	1.06	1.11	.83	1.05	.84	.41
Student's willingness to admit mistakes	n	10	58	21	8	11	7	6
	Mean	4.10	3.96	4.09	3.25	3.71	3.71	4.83
	SD	.74	.80	.72	1.04	.70	.76	.41

Table 38.0 ANOVA's of Perceived Impact of Characteristics with Significant Differences by Student Age

		Sum of Squares	df	Mean Square	F	Sig.
Supervisor's schedule could accommodate the demands of supervision	Between Groups	22.052	6	3.675	2.560	.023
	Within Groups	163.634	114	1.435		
	Total	185.686	120			
Supervisor was available to discuss academic issues	Between Groups	15.609	6	2.601	2.646	.019
	Within Groups	112.077	114	.983		
	Total	127.686	120			
Student's willingness to admit mistakes	Between Groups	10.878	6	1.813	3.018	.009
	Within Groups	68.477	114	.601		
	Total	79.355	120			

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For this same characteristic, students younger than 25 also felt their willingness to admit mistakes had a more positive impact on the relationship and/or their studies and final outcome than students in the 36 - 40 age groups ($p = .023$).

Student Faculty and Perceived Impact

A series of one-way ANOVA's were performed to examine if significant differences existed between student faculty groups and perceived impact of the characteristics. Six items were found to have significant mean differences in terms of perceived impact. Table 39.0 presents the six characteristics and descriptive data for the 12 faculty groups. Table 40.0 presents the ANOVA results for the six characteristics by faculty.

An LSD post-hoc examination revealed between which groups the differences in perceived impact existed. Table 41.0 summarizes the post-hoc tests.

Table 39.0 Descriptive Statistics for Characteristics with Significant Differences in Perceived Impact by Student Faculty

HU = Humanities
 EVD = Environmental Design
 ED = Education
 SS = Social Science
 ENG = Engineering
 SC = Science
 NU = Nursing
 SW = Social Work
 CC = Communication & Culture
 MG = Management
 MS = Medical Science
 KN = Kinesiology

Characteristic		HU	EVD	ED	SS	CC	MG	ENG	SC	NU	SW	MS	KN
Supervisor was easily accessible (by phone, email, or in person)	n	7	8	24	16	2	2	10	20	8	7	7	10
	mean sd	4.43 .79	3.13 1.25	3.71 1.04	3.94 1.12	2.00 0	4.00 0	3.50 .85	2.95 1.19	4.88 .35	4.43 .53	4.71 .49	2.90 1.66
Supervisor's schedule could accommodate the demands of supervision	mean sd	3.71 .95	2.50 1.20	3.54 1.25	3.44 1.03	1.50 .71	4.00 0	2.40 .70	2.65 1.35	4.88 .35	4.00 .82	4.14 .69	3.00 1.05
	mean sd	4.14 .90	3.75 1.16	3.50 1.10	3.88 .89	2.50 .71	4.00 0	3.80 .42	3.05 1.15	4.88 .35	4.29 .49	3.71 .49	3.50 1.27
Supervisor was knowledgeable about research topic	mean sd	4.71 .49	3.50 1.31	3.67 1.13	4.06 1.06	3.00 0	5.00 0	4.60 .52	4.50 .95	3.50 .76	4.71 .49	4.29 .76	3.50 1.27
	mean sd	3.14 1.07	3.13 .83	2.92 .83	3.63 1.15	2.50 .71	2.00 0	4.00 1.15	3.35 .75	3.50 .76	2.71 .76	3.00 .58	2.50 .97
Supervisor wrote letters of support (e.g., scholarships)	mean sd	3.71 .49	3.75 .71	3.13 1.03	4.13 1.31	2.50 .71	3.00 0	3.90 .74	3.80 .77	3.63 .74	3.14 .90	4.29 .49	3.80 1.03

Table 40.0 ANOVA's of Perceived Impact of Characteristics with Significant Differences by Student Faculty

Characteristic	Sum of Squares	df	Mean Square	F	Sig.
Supervisor was easily accessible (by phone, email, or in person)	Between Groups	11	4.838	4.363	.000
	Within Groups	109	1.109		
	Total	120			
Supervisor's schedule could accommodate the demands of supervision	Between Groups	11	5.562	4.869	.000
	Within Groups	109	1.142		
	Total	120			
Supervisor was available to discuss academic issues	Between Groups	11	2.572	2.821	.003
	Within Groups	109	.912		
	Total	120			
Supervisor was knowledgeable about research topic	Between Groups	11	2.638	2.806	.003
	Within Groups	109	.940		
	Total	120			
Supervisor encouraged scholarship applications	Between Groups	11	2.096	2.588	.006
	Within Groups	109	.810		
	Total	120			
Supervisor wrote letters of support (e.g., scholarships)	Between Groups	11	1.796	2.136	.023
	Within Groups	109	.841		
	Total	120			

Table 41.0 Summary of Post-Hoc Tests for Perceived Impact by Student Faculty

Characteristic	Significant Findings
Supervisor was easily accessible (by phone, email, or in person)	<p>Perceived Impact significantly more positive in Nursing than in Enviro. Design ($p = .001$), Education ($p = .008$), Comm. & Culture ($p = .001$), Science ($p = .000$), Engineering ($p = .007$), Social Sci. ($p = .042$) & Kinesiology ($p = .006$)</p> <p>Perceived Impact significantly more positive in Medical Science than in Eviro. Design ($p = .004$), Comm. & Culture ($p = .002$), Education ($p = .028$), Engineering ($p = .021$), Science ($p = .000$) & Kinesiology ($p = .001$)</p>
Supervisor's schedule could accommodate the demands of supervision	<p>Perceived Impact significantly more positive in Nursing than in Humanities ($p = .038$), Eviro. Design ($p = .003$), Education ($p = .000$), Comm. & Culture ($p = .000$), Social Sc. ($p = .002$), Science ($p = .000$), Engineering ($p = .000$) & Kinesiology ($p = .000$)</p> <p>Perceived Impact significantly more positive in Medical Science than in Eviro. Design ($p = .004$), Comm. & Culture ($p = .003$), Engineering ($p = .001$), Science ($p = .002$) & Kinesiology ($p = .032$)</p> <p>Perceived Impact significantly more positive in Social Work than in Enviro. Design ($p = .008$), Comm. & Culture ($p = .004$), Engineering ($p = .003$) & Science ($p = .005$)</p>
Supervisor was available to discuss academic issues	<p>Perceived Impact significantly more positive in Nursing than in Enviro. Design ($p = .020$), Education ($p = .001$), Comm. & Culture ($p = .002$), Social Sc. ($p = .017$), Engineering ($p = .019$), Science ($p = .000$), Medical Science ($p = .021$), & Kinesiology ($p = .003$)</p> <p>Perceived Impact significantly more negative in Science than in Humanities ($p = .010$), Social Sci. ($p = .011$), Nursing ($p = .000$) & Social Work ($p = .004$)</p>
Supervisor was knowledgeable about research topic	<p>Perceived Impact significantly more positive in Humanities than in Enviro. Design ($p = .017$), Education ($p = .013$), Comm. & Culture ($p = .030$), Nursing ($p = .017$) & Kinesiology ($p = .012$)</p> <p>Perceived Impact significantly more positive in Social Work than in Enviro. Design ($p = .017$), Education ($p = .013$), Comm. & Culture ($p = .030$), Nursing ($p = .017$) & Kinesiology ($p = .012$)</p>
Supervisor encouraged scholarship applications	<p>Perceived Impact significantly more negative in Management than in Social Sci. ($p = .018$), Engineering ($p = .005$), Science ($p = .046$), & Nursing ($p = .037$)</p> <p>Perceived Impact significantly more negative in Kinesiology than in Engineering ($p = .000$), Social Sci. ($p = .002$) & Nursing ($p = .021$)</p>
Supervisor wrote letters of support (e.g., scholarships)	<p>Perceived Impact significantly more positive in Medical Science than in Education ($p = .004$), Comm. & Culture ($p = .017$), Management ($p = .015$) & Social Work ($p = .022$).</p> <p>Perceived Impact significantly more positive in Social Science than in Education ($p = .020$), Comm. & Culture ($p = .020$) & Social Work ($p = .020$).</p>

In summary, students in Nursing perceived supervisor accessibility and supervisor availability as having a more positive impact on the supervisory relationship and their studies than students in other faculties did. Students in Medical Science also perceived these characteristics as having a more positive impact than students in other faculties did. These results support the findings from research question nine where students in Nursing and Medical Science were the most satisfied with supervisor availability and accessibility.

Results from research question nine also indicated that students in Science were the least satisfied with supervisor availability. The ANOVA results here support this finding with students in Science reporting a negative impact as a result of supervisor availability.

Students in Humanities and Social Work reported supervisor knowledge of research topic as having a positive impact. From research question nine, these two groups were also the most satisfied with this characteristic. Results from research question nine indicated that overall, students were not satisfied with the encouragement to apply for scholarships. The ANOVA results from this test support that result. Students in all faculties reported this as having a negative impact on the supervisory relationship, their studies and/or final degree outcome. Finally, students in Medical Science and Social Science indicated that letters of support had a positive impact on the supervisory relationship, their studies and/or final degree outcome.

Student Time to Completion and Perceived Impact

A series of ANOVA's were performed to determine if differences in perceived impact existed as a function of completion time. No significant differences were found in perceived impact with supervisor characteristics, characteristics of supervision, or student characteristics between the groups.

Supervisor Demographic Variables and Perceived Impact of the Characteristics

Supervisor Status and Perceived Impact

A series of one-way ANOVA's were performed to examine if significant differences existed between supervisors at different stages of their career (Assistant, Associate, Full & Emeritus) and perceived impact of the characteristics. No significant differences were found in perceived impact of the characteristics.

Supervisor Gender and Perceived Impact

To investigate gender differences in supervisor perceived impact of the characteristics, a series of t-tests were performed. Three items were found to have significant mean differences in perceived impact. Table 42.0 presents the three characteristics and descriptive data for the two groups. Table 43.0 presents the independent t-tests results for the three characteristics by supervisor gender.

Table 42.0 Descriptive Statistics for Characteristics with Significant Differences in Perceived Impact by Supervisor Gender

Characteristic	Male			Female		
	n	Mean	Std. Dev.	N	Mean	Std. Dev.
Student 's schedule could accommodate demands of graduate School	28	3.46	1.20	15	4.27	.59
Student's attitude about their studies	28	3.96	1.10	15	4.67	.62
Student's motivation to complete their program on time	28	3.64	1.16	15	4.67	.49

Table 43.0 Independent Samples Tests of Perceived Impact of Characteristics with Significant Differences by Supervisor Gender

Characteristic	t	df	Sig. (2-tailed)	Mean Difference
Student 's schedule could accommodate demands of graduate School	-2.423	41	.020	-.80
Student's attitude about their studies	-2.271	41	.028	-.70
Student's motivation to complete their program on time	-3.249	41	.002	-1.02

Results indicated that female supervisors perceived the impact of the student's attitude about their studies, motivation to complete their program on time and ability to accommodate the demands of graduate school more positively than male supervisor did. These results matches the findings from research question nine where female supervisors were found to be more satisfied than male supervisors with these same student characteristics.

Supervisor Age and Perceived Impact

A series of one-way ANOVA's were performed to examine if significant differences existed between supervisors of different ages and perceived impact of the characteristics. No significant differences were found in perceived impact of the characteristics.

Supervisor Faculty and Perceived Impact

A series of one-way ANOVA's were performed to examine if significant differences existed between supervisor faculty groups and perceived impact of the characteristics. No significant differences were found in perceived impact of the characteristics.

Years of Supervision Experience and Perceived Impact

To investigate the differences in perceived impact of the characteristics, as a function of supervisory experience, a series of one-way ANOVA's were performed. Two items were found to have significant mean differences in perceived impact. Table 44.0 presents the two characteristics and descriptive data for the groups. Table 45.0 presents the ANOVA results for the two characteristics.

Table 44.0 Descriptive Statistics for Characteristics with Significant Differences in Perceived Impact by Supervision Experience

Characteristic		Years of Supervision Experience						
		<6	6-10	11-15	16-20	21-25	26-30	>30
Student's willingness to seek new information by reading additional resources	n	8	9	6	11	8	1	0
	Mean	4.63	4.44	4.17	3.55	4.75	4.00	
	SD	.52	.53	.75	.82	.71	0	
Student's motivation to complete their program on time	n	8	9	6	11	8	1	0
	Mean	4.75	4.33	2.50	3.64	4.50	4.00	
	SD	.46	.71	1.05	.92	1.07	0	

Table 45.0 ANOVA's of Perceived Impact of the Characteristics with Significant Differences by Supervision Experience

		Sum of Squares	df	Mean Square	F	Sig.
Student's willingness to seek new information by reading additional resources	Between Groups	9.028	5	1.806	3.894	.006
	Within Groups	17.158	37	.464		
	Total	26.186	42			
Student's motivation to complete their program on time	Between Groups	22.455	5	4.491	6.032	.000
	Within Groups	27.545	37	.744		
	Total	50.000	42			

Post-hoc tests could not be performed for either characteristic because at least one group had fewer than two cases. However, for the first characteristic (Student's willingness to seek additional information), it appears that supervisors in the middle range of their careers (16 - 20 years of supervision experience) perceived a more negative impact of the characteristic on the supervisory relationship, the students studies and/or final degree outcome.

For the second characteristic (student's motivation to complete their program on time), it appears that again, supervisors who were in the middle range of their careers (11 - 20 years of supervision experience) perceived a more negative impact of the characteristic. These results match the findings in research question nine where supervisors in the middle range of their careers reported being less satisfied with these two characteristics.

Research Question Eleven

Is there a significant difference between why students and supervisors decide to work together?

Students and Supervisors who had a choice in working together were asked to rate the importance of specific items in deciding to work together. Of the 43-student/supervisor dyads, 38 (88.4%) supervisors reported having had a choice in supervising their student, whereas 35 (81.4%) students reported having had a choice in working with their supervisor. The distribution data for why the 35 students chose to work with their supervisors are presented in Table 46.0. The distribution data for why the 38 supervisors chose to work with their students are presented in Table 47.0.

Students selected 'personality' (mean = 4.63) as the most important reason for working with their supervisors and 'common research interest' (mean = 4.03) as the second most important reason. Supervisors selected 'common research interest' (mean = 4.26) as the most important, and chose 'students' work habits' (mean = 4.16) as the second most important.

A series of paired samples t-test were performed to examine if differences existed in why the student/supervisor dyads chose to work together. There were matched data on 32 student/supervisor dyads. Results of the t-tests are presented in Table 48.0.

Table 46.0 Student Importance Ratings of Characteristics in Choosing their Supervisor

	Very Unimportant (1)	Unimportant (2)	Neither Important nor Unimportant (3)	Important (4)	Very Important (5)	Mean	Standard Deviation
Common research interest	n (%) 1 (2.9)	3 (8.6)	2 (5.7)	17 (48.6)	12 (34.3)	4.03	1.01
Supervisor's professional reputation	n (%) 2 (5.7)	2 (5.7)	6 (17.1)	16 (45.7)	9 (25.7)	3.80	1.08
Supervisor's work habits	n (%) 2 (5.7)	4 (11.4)	8 (22.9)	13 (37.1)	8 (22.9)	3.60	1.14
Recommendation from another graduate student	n (%) 3 (8.6)	7 (20.0)	8 (22.9)	14 (40.0)	3 (8.6)	3.20	1.13
Recommendation from another professor	n (%) 3 (8.6)	10 (28.6)	11 (31.4)	6 (17.1)	5 (14.3)	3.00	1.19
Recommendation from graduate co-ordinator	n (%) 4 (11.4)	11 (31.4)	13 (37.1)	6 (17.1)	1 (2.9)	2.69	.99
Recruited by supervisor	n (%) 4 (11.4)	7 (5.8)	6 (17.1)	14 (40.0)	4 (11.4)	3.20	1.23
Personality	n (%) 0 (0)	0 (0)	2 (5.7)	9 (25.7)	24 (68.6)	4.63	.60

Table 47.0 Supervisor Importance Ratings of Characteristics in Deciding to Supervise their Student

		Very Unimportant	Unimportant	Neither Important nor Unimportant	Important	Very Important	Mean	Standard Deviation
		(1)	(2)	(3)	(4)	(5)		
Common research interest	n (%)	0 (0)	1 (2.3)	3 (7.0)	19 (44.2)	15 (34.9)	4.26	0.72
Student's past research and academic experience	n (%)	0 (0)	3 (7.0)	4 (9.3)	25 (58.1)	6 (14.0)	3.89	0.76
Student's work habits	n (%)	0 (0)	1 (2.3)	5 (11.6)	19 (44.2)	13 (30.2)	4.16	0.75
Recommendation from another professor	n (%)	2 (4.7)	11 (25.6)	13 (30.2)	8 (18.6)	4 (9.3)	3.03	1.08
Recommendation from graduate co-ordinator	n (%)	5 (11.6)	17 (39.5)	11 (25.6)	5 (11.6)	0 (0)	2.42	0.89
Recruited by student	n (%)	2 (4.7)	5 (11.6)	12 (27.9)	12 (27.9)	7 (16.3)	3.45	1.11
Personality	n (%)	5 (11.6)	11 (25.6)	15 (34.9)	7 (16.3)	0 (0)	2.63	0.94

Table 48.0 Paired Samples Test of Difference between Students and Supervisors on Reasons for Working Together

Pair		n	Mean	Mean Difference	t	df	Sig. (2-tailed)
1	Common research interest with student	32	4.31	.22	1.269	31	.214
	Common research interest with supervisor		4.09				
2	Student's past research and academic experience (reputation)	32	3.88	.07	.329	31	.745
	Supervisor's professional reputation		3.81				
3	Student's work habits	32	4.13	.50	2.490	31	.018*
	Supervisor's work habits		3.63				
4	Recommendation from another professor (supervisor)	32	3.06	.18	.757	31	.455
	Recommendation from another professor (student)		2.88				
5	Recommendation from graduate coordinator (supervisor)	32	2.72	.41	1.684	31	.102
	Recommendation from graduate coordinator (student)		2.31				
6	Recruited by student	32	3.47	.28	.893	31	.379
	Recruited by supervisor		3.19				
7	Student's personality	32	2.59	-2.04	-10.522	31	.000**
	Supervisor's personality		4.63				

*p < .05

**p < .01

In summary, significant differences existed between the importance students placed on 'work habits' and the importance supervisors placed on 'work habits'. Supervisors' viewed work habits as being more important than students did. The greatest difference however occurred with the importance placed on 'personality'. Students viewed personality as being much more important in the decision to work together than supervisors viewed it.

This finding supports the data collected on 'why students changed supervisor's during their program'. Of the 121 students surveyed, 27 (22.3%) changed supervisors at least once during their studies. The number one reason for doing so was 'personality conflict' (n = 13, 48.2%), supporting the finding that personality was very important in the relationship. The distribution data for the reasons for changing supervisors are found in Table 49.0.

Table 49.0 Student Reasons for Changing Supervisors

	Change in research interest	Could not meet supervisor's expectations	Supervisor could not meet student's professional needs	Conflict over authorship / ownership of research	Supervisor moved or went on sabbatical	Personality conflict	Sexual harassment
n	5	0	3	3	3	13	0
(%)	18.5	0	11.1	11.1	11.1	48.2	0

Section Three

Qualitative Data

In addition to collecting quantifiable information, the survey also contained a section with three open-ended questions giving participants the opportunity to provide additional information on their student/supervisory relationship. This section presents some of the comments written by student/supervisor dyads for each of the three questions.

Question 1: What characteristics do you feel were the most important in your student/supervisor relationship?

Many of the answers to this question consisted of characteristics that were similar to those identified in research question one. These included 'student's ability to do research', 'student motivation', 'guidance and feedback by supervisor', 'clear expectations', 'supervisor's knowledge', and supervisor's belief in student ability'. However, it was the additional characteristics that were not captured in the quantitative data that are of interest here. These additional characteristics are presented below.

Supervisor Comments

1. "The amount of support and empathy I gave to this student was important."
2. "The relationship was a mutual give-and-take. This made it successful."
3. "Our ability to discuss ideas and issues openly and politely. We liked each other so we got along."
4. "Our mature relationship, her independence and strong work ethics."

5. "We had excellent communication going on between us and that was the most important for me."
6. "The student's dedication, knowledge and honesty."
7. "The student's maturation over the course of the program, went from high level of 'fear of failure' to 'evaluation apprehension' to 'seeking out constructive criticism'."
8. "Task-focused nature of the relationship."
9. "The respect and warmth of the relationship."
10. "The commitment to learning on both parts."
11. "We were both aware of our shortcomings and that to me was very important."

Student Comments

1. "My supervisors knowledge of the process."
2. "My supervisor's willingness to speak up for me as well as challenge me."
3. "My supervisor respected my privacy and left me alone. This was important for me."
4. "The flexibility of the relationship, in that I was working full time and had to set the time frame. My supervisor accepted this."
5. "The fact that we set goals together and she didn't leave it up to me. Often we don't know what goals to set."
6. "My supervisor's openness and sense of humour. You sure need a sense of humour in this place otherwise you won't make it."
7. "My supervisor suggested additional analysis when the results were not as expected. I would not have known that so this was important."
8. "The entire atmosphere of the department. Everyone was interested and supportive."

9. "The safe environment in which I was. I felt I could make mistakes and it would be ok. The professors cared."

In summary, additional characteristics identified by supervisors as being important were maturity, open communication, empathy, mutual give-and-take, honesty, warmth, and strong work ethics. Students identified the atmosphere of the environment, knowledge of the process, collaboration (working together to set goal) and sense of humour as being important.

Question 2: Was there anything NOT mentioned in this survey that had a negative impact on your student/supervisor relationship?

The purpose of this question was to capture any characteristics that would contribute to our understanding of an unsuccessful relationship or characterize ineffective supervision.

Supervisor Comments

1. "The politics of the department made it difficult to supervise effectively. "There are too many changes going on and too many unhappy people."
2. "There were no problems but I foresee a problem down the road as I have larger numbers to supervise and I have a heavier work load."
3. "My student lacked confidence and so I couldn't be critical of her work. This made supervision difficult and subsequently ineffective."
4. "The student's busy schedule had a negative impact."

5. "The student's hidden agenda had a negative effect. He was married and didn't realize the impact the program would have on his spare time."
6. "The student initially did not take negative feedback well. I needed to be positive about some aspects even though there was more work to be done."

Student Comments

1. "The supervisor had too many students. I wished that he had more time with me to focus on my research."
2. "The program did not have adequate numbers of supervisors and therefore not enough time for students."
3. "I worked while I did my masters. This was hard but I needed the money."
4. "My supervisor didn't push me hard enough. I had too much freedom. I think he was too busy to notice that I needed more push"
5. "I didn't get enough conceptual feedback."
6. "What supervisory relationship? Did I have a supervisor? Where was he?"

In summary, characteristics identified by supervisors as having a negative impact on the relationship were department politics, supervisory load, ability for the students to accept negative feedback and the student's outside schedule/responsibilities. Students also identified the supervision load as having a negative impact. In addition, students identified outside workload, amount of feedback, and lack of guidance (too much freedom) as having a negative impact.

Question 3: Who and/or what contributes the most to the success of the program?

The purpose of this question was to capture characteristics that students and supervisors believed contributed the most to the overall success of the student's program.

Supervisor Comments

1. "The student's overall ability and desire to undertake a graduate degree."
2. "The student's personal maturity."
3. "The student was a remarkable learner."
4. "The student's enthusiasm and academic ability."
5. "The quality of the student. The student gave me the feeling she appreciated my guidance and support."
6. "The student's motivation and skill."
7. "His desire to complete a worthwhile project and my understanding of his unique situation."
8. "Our friendly relationship."
"The student was keen and hardworking."
9. "Student's high degree of motivation to do well and willingness to work long and hard hours."
10. "Absolute enthusiasm for the academic discipline. Very pleasant personality."
11. "The student's motivation and organization."
12. "Student's enthusiasm and motivation."

Student Comments

1. "My family's support, both personal and financial."
2. "The direction I received from various professors and the relationships with other graduate students."
3. "My motivation to finish. The support from my peers."
4. "The support from family and friends."
5. "My determination and availability of my supervisor."
6. "The support I received from my supervisor, and fellow students."
7. "The environment made it work (office, peers and excellent supervisor)."
8. "My perseverance and confidence I could do well. The help from fellow colleagues and my supervisor."
9. "The other grad students and a professor at another university."
10. "I really wanted it."
11. "Me."
12. "The inspiration from my supervisor."

In summary, supervisors identified student's academic ability, motivation, and enthusiasm as contributing the most to the success of the program. Students also identified motivation (determination) as contributing to their success, however also identified the support of family, friends, peers (fellow graduate students) and their supervisors as contributing to their success.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Discussion

This study examined the quality and nature of the supervisory relationship in graduate education. In this chapter, the findings will be discussed in detail. In addition, this chapter presents the recommendations, limitations of the study and the suggestions for future research.

The Most Important Characteristics of the Supervisory Relationship

To identify the most important characteristics in the student-supervisor relationship, the researcher began with an extensive list of characteristics identified in the literature to be important in supervisory relationships. Following testing and interviews, the most important characteristics in graduate student supervision emerged. Previous studies examining supervisory relationships have often described supervision in terms of mostly one-word descriptors (Eggleston & Delamont, 1983; Fraser & Mathews, 1999; Hill, Acker & Black, 1984; Moses, 1984; Powles, 1988). In this study, the most important one-word descriptors were also identified with a specific focus on graduate student supervision; however, the researcher went one step further and described the meaning and nature of the one-word descriptors, which in this study were referred to as 'characteristics'.

Both students and supervisors identified the same characteristics as being the most important. To the knowledge of the researcher, no previous studies have examined whether students and supervisors disagree or agree in what they consider to be important characteristics in the relationship. It is therefore a new and interesting finding that both

students and supervisors agreed on the importance of most of the characteristics in this study. This could be interpreted to mean that both students and supervisors have a similar understanding of the supervisory relationship in graduate education. In the section below, each of the characteristics agreed upon by both students and supervisors will be described and discussed in detail.

Availability, Accessibility and Promptness

Supervisor and student availability and accessibility were found to be amongst the most important characteristics in the supervisory relationship. In addition, the supervisor's promptness in returning messages was very important. Although availability and accessibility have been identified as important in previous research (Eggleston & Delamont, 1983; Hill, Acker & Black, 1984; Moses, 1984; Powles, 1988), their exact nature was not fully understood. In this study, availability, accessibility and promptness could be grouped together to describe the ease with which students and supervisors meet and communicate with each other. The results indicated that this involves both the ease of contacting each other (email, phone, or in person), the supervisor's schedule in terms of handling the demands of supervision, availability to discuss academic issues, and the scheduling and length of regular meetings during writing stages of the thesis/dissertation process.

It seems logical to conclude that both parties need to provide information on where and how they can be contacted. In addition, the supervisor's schedule needs to be such that he/she can accommodate graduate students, especially during the proposal generation and the writing stages. In the qualitative section of the results, the supervisors' busy schedule was listed as having a negative effect on availability to supervise

effectively. It is therefore clear that being able to contact each other is only half of the availability issue, the other half is being able to take the time to have regular meetings. Moses (1984) stated that regular meetings were important throughout the student's program, however in this study both students and supervisors agreed that it was regular meetings during the proposal development and writing stages that were most important.

Guidance and Feedback

Many researchers in the past have identified guidance and feedback as essential in the supervisory relationship (Eggleston & Delamont, 1983; Fraser & Mathews, 1999; Magnuson, Wilcoxon & Norem, 2000). However, as previously mentioned in Chapter Three, both are very subjective and can take on many meanings such as guidance during course work, guidance during topic selection, and guidance during proposal writing. In the present study, the meanings of guidance and feedback have been identified in terms of what is perceived as important. Both students and supervisors believed that guidance and feedback during topic selection, proposal writing and thesis/dissertation writing were the most important. In addition, both parties viewed the student's ability to accept the feedback in terms of criticism as important.

Giving guidance and feedback is in line with availability and the scheduling of meetings mentioned above. It appears that students and supervisors viewed the time around topic selection and writing as the most important times to meet and the times when guidance and feedback were needed the most.

A possible explanation for why students need their supervisors the most at these times could be that without previous research experience, graduate students are unsure of the expectations and nature of a research project. Therefore, it is at this time during their

program, that they rely on their supervisors to provide the information and guidance required. Where dissatisfaction occurred, it could be speculated that supervisors believed students should be completing the work alone and proving they had the ability to do independent research. In these cases, it could be argued that student expectations in terms of receiving guidance and help exceeded the supervisor's expectations in terms of what should be provided.

Given that both students and supervisors have identified guidance and feedback on the research topic and project as essential, it is not surprising that supervisor knowledge emerged as one of the most important characteristics in graduate student supervision. It seems logical that the ability to guide a student through topic selection and writing stages would depend a great deal on the knowledge one has in the student's area of research. This leads to the next category of the most important characteristics.

Knowledge and Competence

Students and supervisors perceived the supervisor's knowledge of the research topic, as well as the student's competence to undertake a research project, among the most important characteristics contributing to the success of the relationship. Eggleston and Delamont (1983) found that supervisors must be specialists in the student's area of research if the supervision was to be effective. The present study does not entirely support that finding. It would appear that the supervisor might not have to be an expert in the area as long as they are knowledgeable and can offer guidance and feedback. This explanation would be more in line with Kaiser's study (1997) which found that students wanted to know that their supervisors had something to offer them in terms of guidance

and advice. However, they did not have to be specialists or share the same passion for the specific thesis/dissertation topic.

The present study did not identify knowledge as being among the most important student characteristics. Instead, student competence to do research was salient, as was the supervisor's belief in the student's ability. It is perhaps understood that students entering a program may not have the knowledge in a selected area of research, however the important thing is that they have the ability to learn and gain that knowledge. It is equally important that supervisors believe that students have the competence to learn and succeed. Student competence and the supervisor's belief in the student's ability have not been previously identified in the research and only emerged during the interview phase of the present study. These new characteristics add to our understanding of what is perceived as important in graduate student supervision.

Organization and Time-Management

Students and supervisors rated organization and time-management as very important in the supervisory relationship. Specifically, both students and supervisors wanted organized and time-managed meetings. Magnuson, Wilcoxon and Norem (2000) also found that the quality and focus of meetings were important and that both students and supervisors wanted meeting times used appropriately. Given the heavy workloads of each, it is not surprising that a similar result emerged from this study. Both students and supervisors obviously felt their time was valuable and therefore they did not want it wasted.

In line with this, is the student's ability to handle the demands of graduate school, which was also identified as one of the most important characteristics of successful

graduate school completion. In the interviews, it was pointed out that many students were working outside the university and that this could have had a negative impact on the supervisory relationship in terms of a student being time-managed and being able to meet appropriate deadlines. This supports the findings by McMichael (1993) who also found that outside responsibilities could have a negative impact on the relationship.

Finally, as part of the organization of the relationship, it was found that it is important for supervisors to outline and discuss the expectations of a graduate program at the beginning of the student's program. It would seem that students want to know what is expected and supervisors feel that if expectations are outlined in the beginning, then there will be no surprises later in the program. This particular aspect of the supervisory relationship was not previously identified in the research and emerged as a result of this study. The finding coincides nicely with time management, for if expectations are clear, then students can better organize and plan their time.

Student Attitude: Enthusiastic, Positive, and Motivated

Several student characteristics that emerged as being among the most important were enthusiastic, positive and motivated. All three of these were identified in previous studies as being important (McMichael, 1992; Muszunski & Akamatsu, 1991). However, these studies did not identify the exact nature of being enthusiastic, positive or motivated. The results of this study showed that specifically, it is important for students to be enthusiastic about their research topic, to have a positive attitude about their studies in general, and to be motivated to finish their degree in a specified time frame. It might be that if a supervisor is working with a student who is not motivated or enthusiastic then he/she will not feel compelled to offer guidance and feedback. This would also impact

the supervisor's perception of the student's ability and competence. It could also be argued that supervisors might have perceived a lack of motivation when students were not focused on their studies 100% of the time, and perhaps not acknowledging the outside responsibilities the students were also trying to balance with graduate studies.

Overall, supervisor satisfaction with the relationship does appear to be affected by student attitude and motivation. This supports the findings of Muszunski and Akamatsu (1991) who found that successful supervision was positively correlated with student motivation and attitude.

Two other items that were found to be very important, were the student's willingness to share authorship on joint projects and the respect the student had for the supervisor's personal matters. Neither of these was previously identified in the literature, however it would seem logical to group them into this section on student attitude. A positive attitude might include working collaboratively with the supervisor as well as respecting personal information. Ideally, it would have been beneficial to run a factor analysis on the student characteristics to determine if these items did in fact group together to describe student attitude. Unfortunately, the supervisor sample size did not permit such an analysis.

Supportive and Encouraging

The final two characteristics found to be among the most important were supportive and encouraging. These two characteristics have been mentioned extensively in the literature on supervision (Fraser & Mathews, 1999; Magnuson, Wilcoxon & Norem, 2000; Moses, 1984; Powles, 1988). In all studies, researchers have stated that it is important for supervisors to be supportive and to encourage their students. As with the

other characteristics, the nature and context of support and encouragement were not identified. However, the results from this study describe exactly what students and supervisors meant by 'support' and 'encouragement'.

With respect to support, it was support of academic problems that was identified as being the most important. This included writing letters of support on behalf of the student for scholarships and employment. It is interesting to note that support regarding personal problems did not emerge as one of the more salient issues in graduate student supervision. It appears that both students and supervisors perceive academic support as being more important. This is not to say that students do not require personal support, it simply means that students may be seeking personal support from sources other than their supervisors. Specific answers to the open-ended qualitative questions confirm this, in that many students identified the personal support of family, friends and peers as important and contributing to their success.

In terms of encouragement, both students and supervisors felt it was important for supervisors to encourage their students to apply for scholarships. Fraser and Mathews (1999) found that scholarships and funding had a positive impact on overall success and completion times. In this study, it is possible that both parties understood the financial burden of being a graduate student and how it could influence completion times. Therefore, they both agreed that applying for scholarships was important. The results also indicated that both students and supervisors believed that it was the responsibility of the supervisor to encourage the students to apply for such funding. This finding supports Powles (1988) who found that student's did not always know what scholarships to apply for or where to seek funding and therefore relied on their supervisors to provide this

information. On the other hand, it could be argued that students should take more responsibility in seeking out scholarship applications and rely less on their supervisors for such information. It might be that other sources within the department or Faculty (e.g., graduate co-ordinators, graduate secretaries) have the necessary information.

Summary

To conclude, the characteristics identified as the most important in the student-supervisor relationship appear to have an academic and professional focus. Neither students nor supervisors identified personal support or friendship among the most important characteristics. Both viewed the academic nature of the relationships as being more important than the personal nature. This is interesting, because it relates to the literature on mentoring in graduate education. In the classical sense, mentoring would include personal characteristics in terms of friendship, socialization, and counseling in times of difficulty (Levinson et al, 1978). The present study supports previous research claiming that supervisors are not mentors in the classical sense, however they are providing some of the mentoring functions as outlined by Levinson. For example, Jacobi (1991) states that supervisors take on a mentoring role, which includes academic support, guidance, and providing information. Nerad (as cited in Gaffney, 1995), agreed with this, stating there is a clear difference between supervising and mentoring in the classical sense. It is possible that students seek academic support and guidance from their supervisors and personal support and friendship from family, friends and peers.

The Constructs of Supervision

Previous studies examining the categories or constructs of supervision in graduate education have focused entirely on either clinical supervision or field supervision (Fraser

& Mathews, 1999; Friedlander & Ward, 1984; McMichael, 1992). The present study examined the categories of characteristics important in all areas of graduate supervision. The results revealed two related factors onto which the characteristics of supervision and supervisor characteristics loaded. The first factor was named Supervision Structure and included items measuring availability, accessibility, promptness, regular meetings, academic support and encouragement. The second factor, called, Supervisor Expertise contained items measuring guidance, feedback, knowledge and expectations. One item was found to load on both factors. This was the supervisor's belief in the student's ability. This suggests that supervisor behaviors in all areas (e.g., availability, amount of guidance and support) were influenced by belief in student ability.

The above results indicated that supervisor characteristics and characteristics of supervisions grouped into either the structure of the relationship in terms of communicating, meetings, and academic discussions or into supervisor expertise in terms of knowledge, guidance, and feedback. The correlation between the Factors indicated that supervisor's who provided structure also provided expertise. In other words, if they did one well, they seemed to do the other well.

McMichael (1992) examined the constructs of supervision in a clinical setting and also found two groupings for the supervisor characteristics. The first she called Educational Support, which included guidance and expertise. The second, she called Personal Support, which included accessibility and availability. McMichael's two constructs appear to be very similar to those found in this study, with Educational Support appearing similar to Supervisor Expertise and Personal Support appearing similar to Supervision Structure. This result leads to the possible conclusion that similar

constructs of supervision exist regardless of Faculty or department. To support this further, Fraser and Mathews (1999) devised a model of supervision consisting of three divisions. The three areas were 'expertise in research', 'educational support' and 'guidance and feedback'. The difference, however, between the present study and the results of Fraser and Mathew's is that the results in this study indicated that educational support and guidance/feedback fell into the same group.

Student and Supervisor Satisfaction and Impact of the Characteristics

Significant positive correlations existed between satisfaction with and perceived impact of all the characteristics on Subscales 3 and 4 for students and on Subscale 5 for supervisors. Essentially, what this implies is that the greater the satisfaction with a characteristic, the more positive the impact was on the student, the supervisory relationship, the student's studies and/or final degree outcome. Subsequently, the lower the satisfaction, the more negative the impact, indicating that the quality and nature of the supervisory relationship influenced the final outcome.

Numerous studies have also found that the quality and nature of the relationship between a supervisor and graduate student can impact overall program quality (Hill, Acker & Black, 1994; Moses, 1992; Powles, 1993), the student's quality of work (Kaiser, 1997), student self-esteem (Hodgson & Simoni, 1995) and overall success in graduate school (Donald, Saroyan & Denison, 1995). Although the present study supports the literature linking satisfaction to impact, the exact nature of the impact is not known. However, it confirms that dissatisfaction with a characteristic is likely to have a negative impact on the supervisory relationship and/or the student. To this point, previous studies had not examined the correlation between satisfaction and impact across all Faculties in

graduate education, therefore this study is a starting point for future research examining the nature of the impact in all areas. It is also important to note that this research confirmed that both supervisor and student characteristics can influence outcome.

Students and supervisors should be aware of the most important characteristics in the relationship and strive to ensure satisfaction. Given the results from Research Questions One and Two, it is evident that supervisors should ensure structure and expertise for the student and students should ensure structure as well as a positive attitude, which includes motivation, enthusiasm and respect.

Perceptions of Impact within Student/Supervisor Dyads

This research question examined whether each member of the dyad (student and supervisor) perceived the impact of the characteristics the same or differently. From Research Question Three, it was determined that satisfaction and impact were positively correlated for both students and supervisors, indicating agreement between high satisfaction/positive impact and low satisfaction/negative impact. However, the results from research question four indicated that students and supervisors did not perceive the impact similarly for all characteristics. Specifically, there were two areas where perception differed; availability and guidance. Supervisors perceived their availability (email/phone/in person, discussing academic issues, and amount/length of meetings) as having a more favourable impact than students did. In addition, supervisors perceived the guidance they provided (on research topic, proposal and thesis) had a more favourable impact than students did. These differences in perceived impact were highly significant

with p values ranging from .012 to .000, and effect size values ranging from .399 to .660 (see Tables 11.0 and 12.0).

Although previous studies have not examined perceived impact within student/supervisor dyads, results from studies examining students and/or supervisors separately coincide with the results from this study. For example, Powles (1988) surveyed students and found that supervisor availability, frequency of face-to-face meetings and guidance were often cited as problem areas in the supervisory relationship. The results from this study support this finding while at the same time indicating that supervisors did not perceive their availability to be as much of a problem as students perceived it to be.

The present results contradict the findings of Moses (1984) who surveyed supervisors about aspects of supervision they found to be most challenging. Two areas of concern identified by supervisors were the amount of guidance that students should be given and the frequency and length of meetings. Holdaway, Deblois and Winchester (1995) also found that frequency of meetings and amount of guidance/support were areas of concern among supervisors.

In contrast, the results from this study imply that supervisors may be satisfied with what they are providing because they perceive the impact of their behaviours quite favourably. This leads to a possible conclusion that while students' needs were not necessarily being met in terms of meetings and guidance, supervisors felt that they were being met. The comments from the open-ended question addressing negative aspects of the supervisory relationship support this finding. Many students indicate that their supervisors were too busy to provide the time and guidance they required.

From these results, it is recommended that students be forthcoming as to the amount of time and guidance required. Supervisors, on the other hand, should be aware that students might require more time and guidance than is apparent.

Interestingly, there were no differences in perceived impact for both students and supervisors with regard to the student characteristics, indicating that students' perceptions of their own behaviours were similar to their supervisor's perceptions. This being the case, it could be argued that in terms of availability and attitude, students were aware of their weaknesses whereas in terms of availability and providing guidance, supervisors were either not as aware of their weaknesses or not as willing to admit them.

Overall Satisfaction with the Supervisory Relationship

The result of the paired samples 2-tailed t-test indicated that supervisors were more satisfied (mean = 4.65) with the supervisory relationship than students (mean = 3.88), $t(42) = -4.627$, $p = .000$. Supervisor satisfaction appears high. However this is not surprising, as it may have been skewed due to reluctance to admit anything other than satisfaction with the relationship given that supervision is a necessary task most professors undertake. Dissatisfaction could imply they are not performing an aspect of their job effectively.

To the knowledge of the researcher, there have been no studies examining dyad differences in overall satisfaction with supervision. Therefore, this particular result indicating that supervisors rated the relationship more favourably than students did makes a contribution to the literature on supervision.

Considering the importance of supervision in graduate education (Holdaway, 1991; Holdaway, Deblois & Winchester, 1994; Lovitts & Nelson, 2000; Seagram, Gould

& Pyke, 1998) and the correlation between satisfaction with supervision and completion rates and withdrawal (Holdaway, Deblois & Winchester, 1994), the present result must not be ignored. Furthermore, it must be taken into account that the present study only surveyed students who had completed their studies, thus implying a successful outcome. The sample (all completers) coupled with their overall satisfaction with supervision leads to one of two possible conclusions. First, overall satisfaction may have little effect on completion, given the moderate mean satisfaction score and 100% completion rate for those surveyed. Second, and mutually exclusive, satisfaction may be positively correlated with completion. It might be that students who do not complete (i.e., withdrew) had a lower satisfaction. Certainly the comparison of completers and non-completers would provide evidence to support one of the two preceding conclusions. This will be discussed later in this chapter in the section on recommendations for future research.

Satisfaction with Individual Characteristic and Overall Satisfaction with the Supervisory Relationship

The goal for this question was to take the most important characteristics already identified in Research Question One and determine if any of them influenced overall satisfaction more than the others did. For students, three variables accounted for significant unique variance in predicting overall satisfaction with the supervisory relationship. These were the supervisor's schedule being able to accommodate the demands of supervision, the supervisor's belief in the student's ability, and the feedback provided on the thesis/dissertation. For supervisor's, one variable accounted for unique

variance in predicting overall satisfaction with the supervisory relationship. This was the student's competence to undertake a research project.

With respect to students, the three variables that influenced satisfaction more than others are interesting in terms of the factor analysis results from Research Question Two and in terms of the responses to the open-ended questions on the survey. One variable (supervisor's schedule) belongs to the construct *Supervision Structure*, a second (feedback on thesis) belongs to the construct *Supervisor Expertise*, and the third (belief in student ability) was the one variable that belonged to both groups. It could be concluded that each construct is equal in terms of predicting overall satisfaction. In other words, the structure is no more important than the expertise. It would have been different had the three variables accounting for the most variance belonged to a single construct.

The responses to the open-ended questions also support the above findings. Specifically, the student comments identifying negative aspects of the relationship were all related to the supervisor's busy schedule or to the lack of feedback received.

The results are consistent with those by Holdaway, Deblois and Winchester (1995) who found that effective supervision was often defined in terms of availability and providing feedback. The results are also consistent with the results of Magnuson, Wilcoxon and Norem (2000), who found that a hands-off approach (no time or feedback) was reflective of "lousy" supervision. Participants in their study emphasized the importance of accurate, specific and abundant feedback. The results of this study confirm this while indicating that the feedback on the thesis/dissertation was the most important feedback required.

Also significant in predicting overall satisfaction was the supervisors' belief in student ability, which was not previously identified in the literature on supervision. As a reminder, it emerged from the interviews in Phase One as an important supervisor characteristic. To this point, it is a very interesting characteristic as it was the only variable to load on both factors in the principal axis factoring and it accounts for significant unique variance in predicting overall satisfaction. This is a contribution not previously made to the literature on supervision. Students obviously feel that working with a supervisor who believes in their ability influences the nature of the relationship and overall satisfaction with the supervisory relationship.

With respect to supervisors, the one variable that accounted for unique variance in predicting overall satisfaction was student competence. This supports findings by McMichael (1992) who found that supervisors preferred working with students who were competent. Other than the one study, there is very limited research examining student characteristics and supervisor satisfaction. The majority of the studies focus on supervisor characteristics and student satisfaction.

Overall Satisfaction with The Supervisory Relationship and Satisfaction with Graduate Education

There was a significant positive correlation between overall satisfaction with the supervisory relationship and satisfaction with graduate education, indicating that the nature and quality of the relationship had a direct impact on satisfaction with graduate education. Hill, Acker and Black (1994), Moses (1992) and Powles (1988) all found that the perceived quality of graduate education was influenced by the perceived quality of the supervisory relationship. The results from this study support those findings.

Given that the quality of graduate education impacts the reputation of the university (Holdaway, 1996), which in turn impacts enrolment (Lovitts and Nelson, 2000; Milem, Berger & Dey, 2000), the present results indicating a strong relationship between the quality of the supervisory relationship and the quality of graduate education must not be ignored. The goals of graduate education are to prepare people to practice as independent professionals and to produce research that is linked to the intellectual, social and economic development of society (LaPidus, 1989). It seems logical that achieving these goals would depend on the quality of graduate education programs. Therefore, the correlation between satisfaction with graduate education and satisfaction with supervision indicates that the nature and quality of the supervisory relationship could also influence achieving the goals of graduate education.

Satisfaction, Role Modeling and Academic Careers

It is interesting that significant relationships did not emerge between the decision to pursue an academic career and either satisfaction with the supervisory relationship or role modeling. Surprisingly, less than half of the students surveyed (44.6%) were, in fact, planning an academic career. Unfortunately, information was not collected on the career pursuits of the other 55.4%. While these results support the concern for the future supply of new scholars in academia (Hill, Acker & Black, 1994; Statistics Canada, Feb. 2000) they also indicate that the supply has little to do with the supervisory relationship. Given that the quality of the supervisory relationship is highly correlated with the quality of graduate education, this further implies that the future supply has little to do with the quality of graduate education programs. Universities should examine other variables that might influence the decision to become an academic, such as the culture and environment

of the university as well as student mobility. It could be that industry provides more lucrative employee packages to new PhD graduates. Or, perhaps, students are not as mobile as they once were and with the current university policies on hiring internally, students are forced to go to industry for employment. These possibilities should be examined if universities wish to increase the supply of new scholars in academia.

There was, however, a significant positive correlation between overall satisfaction with the supervisory relationship and role modeling. Morgan (1993) states that role modeling often occurs in academic settings in the areas of research and instruction. Modeling involves a more advanced person engaging in the desired behaviors, so that a less experienced person can learn the behaviours in a similar fashion (Morgan, 1993). Role modeling has previously been found to be an important characteristic in the student/supervisor relationship (Cesa and Fraser, 1989; Morgan, 1993). The present results support this result, indicating that positive role modeling is a characteristic of effective supervision. Role modeling has also been described as a characteristic of mentoring. From Research Question One (identifying the most important characteristics) it was determined that supervisors were providing some but not all of the mentoring functions described by Levinson et al (1978). It is now apparent that role modeling is among the mentoring functions provided by supervisors, hence impacting overall satisfaction with the supervisory relationship. More and more, the relationship is looking similar to a mentoring relationship excluding the personal support and friendship dimension, which students are getting from sources outside the supervisory relationship.

This study provides evidence that a personal relationship and friendship does not impact overall satisfaction. However structure (i.e., availability, organization), expertise

(i.e., guidance, knowledge) and role modeling do impact satisfaction. Perhaps these are the dimensions that distinguish classic mentoring from effective supervision. One could argue that it is time to abandon the classic definition of mentoring and recognise that more than one person provides the necessary functions to any one graduate student. In the case of graduate education, supervisors provide guidance and role modeling, whereas families, friends and peers provide personal support and friendship. It would be beneficial to repeat the study and include an additional question on whether students perceived their supervisors to be mentors. It could be predicted that where satisfaction is high and positive role modeling identified, supervisors are more likely to be viewed as mentors.

Satisfaction, Impact and Demographic Variables

Status

There were no significant differences in the perceptions of supervision between students completing a master's degree and those completing a doctoral degree. This indicates that the experience in terms of satisfaction and impact is similar for both. Status was examined for exploratory purposes and therefore there are no studies to support or contradict this finding

Supervisor status in terms of academic rank and years of supervisory experience was also examined for exploratory purposes. Results indicated that supervisors at different stages of their career in terms of academic rank (i.e., assistant, associate, full professor) do not differ in their perceptions of the supervisory relationship, however they did differ as a function of the number of years experience they have supervising students. Supervisors with 16 - 20 years of experience were less satisfied with and perceived a

more negative impact on outcomes due to students' willingness to seek additional information. In addition, supervisors with 11 - 20 years' experience were less satisfied and perceived a more negative impact on outcomes due to student motivation. A possible explanation for this is that supervisors in the middle stages of their careers expect more from students in terms of seeking additional resources and being motivated. Supervisors with less experience may be more willing to motivate as well as help students find additional resources. Supervisors with more than 20 years experience may not feel as affected by a student's lack of motivation or willingness to seek additional information. At this point in their careers, they may have lost interest or motivation themselves and hence are not affected by a lack of student motivation. On the other hand, they may have more time to devote to motivating students and feel less resentful of students needing more motivation. This certainly should be examined in future studies on supervision.

It should be noted that as an extension to this question, overall student satisfaction was examined in terms of supervisors' experience with supervision, however no significant differences were found. It appears that the number of year's experience with supervision a supervisor has does not affect student satisfaction.

Gender

In terms of overall satisfaction with the supervisory relationship, there were no significant differences between males and females perceptions (means = 3.63 and 3.62 respectively). This finding contradicts the findings by Worthington and Stern (1985), Hite (1985) and Powles (1993) who found that in general, male students perceived better relationships with their supervisors than female student's did. Considering the dates of the above studies, it is apparent that the gap in satisfaction between males and females

has narrowed in the past five or more years. Overall, the satisfaction scores for both groups fall below 'satisfied' (4.00/5.00) leading to a conclusion that neither group is very satisfied with the relationship in general.

There were only two individual supervisor characteristics where males were significantly more satisfied than females. The first was the supervisor's knowledge of the research topic and the second was the letters of support written by the supervisor. Although females were less satisfied with these characteristics, a significant difference in impact between the two groups only occurred with respect to supervisor knowledge. With respect to the letters of support, Hite (1985) reported that males perceived more support from their supervisors than did their female colleagues. The present results support this finding.

The supervisor's knowledge of the research topic was not previously identified as an area where males and females differed in terms of satisfaction. This new finding adds to our understanding of the supervisory relationship, however this should be examined in greater detail to determine why females perceive the knowledge in terms of research topic less favourably than males do.

It is particularly interesting that in terms of supervisor gender, females were more satisfied with student schedules, motivation and attitude. Previous studies have found that male supervisors often perceive better relationships with students and female supervisors may have higher standards for what constitutes a good relationship (Worthington & Stern, 1985). The results of this study contradict the conclusions of Worthington and Stern. It could be that female supervisors have lowered their standards since the mid-eighties when Worthington and Stern conducted their study.

A second explanation for the differences in satisfaction between male and female supervisors could be that female supervisors are more understanding when it comes to dual roles and the subsequent effect that this can have on schedules, motivation and overall attitude. It might be that many students are married with families to support and care for, which can be taxing on their studies. It could be that female supervisors have more empathy for this situation. This study did not examine marital status, number of dependants or work outside the university however it is recommended they be examined in future studies.

Age

It has been argued that younger students are generally more dissatisfied with the supervisory relationship than older students are (Powles, 1988). The results of this study provide evidence to support the findings of Powles in that students over 50 years of age were more satisfied than younger students with supervisor availability in terms of schedules and discussing academic issues. Older students also perceived the impact of supervisor availability more favourably than younger students did. The findings here suggest that older students may be more understanding of busy schedules. Furthermore, it could be suggested that older students require less time on behalf of the supervisor and therefore may not be as critical of the supervisor's busy schedule. As suggested in the Literature Review, age may serve as a proxy for experience leading to the assumption that older students entering graduate school are bringing life experiences into the process. These experiences may include self-directed learning, independence, self-motivation, and time-management, all of which could result in the student needing less of the supervisor's time.

Students over 50 years of age also perceived the impact of admitting their mistakes more favourably than younger students did. This finding was not surprising as it seems logical that older students with more life experience may recognise that they are fallible and not expected to know everything. Their egos may not be as dependent upon being right. They may also have greater experience receiving criticism and therefore be more willing to accept it and recognize its benefits.

In terms of Supervisor age, there were no significant differences in satisfaction or perceived impact with the characteristics. These findings contradict the findings of Yerushalmi (1993) who found that middle-age supervisors were often more critical and less satisfied with supervision. Yerushalmi stated that middle-age supervisors often felt threatened in the presence of younger students aspiring for their jobs. The present study does not provide support for this conclusion. Instead, it appeared that supervisors of all ages were equally satisfied with the relationship.

Faculty

There were statistically significant differences in student satisfaction with some of the characteristics as a function of faculty. Students in Nursing and Medical Science appeared the most satisfied with supervisor availability, the supervisory relationship in general and graduate education. The least satisfied with supervisor availability and overall satisfaction were students from the Faculty of Communication and Culture and Faculty of Science. For students in Science, it appeared that the area of least satisfaction was with the supervisor's schedule accommodating the demands of supervision. Specifically, students in Science scored 2.60/5.00 indicating they were not satisfied with this characteristic. The nature of the supervisory relationship in Science coupled with the

work load demands placed on faculty members appeared to be affecting the perceived quality of graduate education in that Faculty. Interestingly, students in Engineering were also dissatisfied in general with the supervisors' schedule (2.70/5.00). However, they were satisfied overall with supervision (4.00/5.00), indicating that supervisor schedules do not affect students in all Faculties the same way.

Students in Humanities and Social Work appeared the most satisfied with supervisor knowledge, while students in Communication/Culture, Nursing and Kinesiology were the least satisfied. Students in Engineering appeared the most satisfied with the encouragement to apply for scholarships and with the letters of support written by their supervisors. Finally, students in Communication/Culture, and Management were the least satisfied with the encouragement to apply for scholarships and with letters of support.

In summary, it appears that overall, students in Nursing and Medical Science were the most satisfied with supervision and their graduate education and students in Communication/Culture and Science were the least satisfied. It should be noted however that the results found in this study reflect the perceptions of only a small number of the students registered in each Faculty. For example, only two students from Communication/Culture participated in the study making it difficult to generalize findings for that Faculty. Faculties with larger sample sizes (e.g., 20 students from Science) were comprised of students from many departments (e.g., Biology, Chemistry, Physics, Geology/Geophysics) again making it difficult to make strong conclusions for the entire Faculty.

As mentioned in the Literature Review, there did not appear to be any research examining the differences in supervision and satisfaction with supervision across all Faculties in graduate education prior to this study. There is only one study by Seagram, Gould and Pyke (1998) that examined differences in satisfaction between students in Humanities, Social Sciences and Science. They found that students in Social Sciences reported higher levels of overall satisfaction with the supervisory relationship than students in Science or Humanities did. Although the present study also showed that students in Social Science were more satisfied with the supervisory relationship (mean = 4.00) than students in Science (mean = 3.35) and Humanities (mean = 3.86) were, the differences were not significant.

For supervisors, no significant differences were found in satisfaction as a function of Faculty, implying that in general, supervisor's perceptions of supervision are consistent across all Faculties.

Time to Completion

Satisfaction with supervision was not found to influence time to completion for students. This is a very interesting finding considering the concern about completion rates among university administrators (Holdaway, Deblois & Winchester, 1994; Canadian Association for Graduate Studies, 1992). Given that previous studies have linked the quality of supervision to completion rates (Holdaway, 1991; Holdaway, Deblois & Winchester, 1994), this finding is surprising. In this study, it was found that satisfaction and impact were positively correlated, indicating that supervision did have impacts on the supervisory relationship, the students studies, and/or final degree outcome. However the nature of the impact did not include completion rates. It is certainly

recommended that impact be examined in greater detail to determine how the supervisory relationship and the student's studies are affected.

Working Together as Student and Supervisor

Prior to this study, reasons for choosing a supervisor or deciding to supervise a student had not been examined. This section therefore provides valuable information about the student-supervisor relationship, which has not been captured elsewhere. Very interesting results emerged as to the reasons why students and supervisors decided to work together.

Results indicated that for supervisors, the two most important reasons for supervising a student were common research interest first and the student's work habits second. For students, the two most important reasons were personality first and common research interest second. Both students and supervisors agreed on the common research interest with no significant differences in their scores. However significant mean differences existed with the other two reasons (work habits and personality). It is not surprising that supervisors would choose work habits given the emphasis placed on student competence, motivation and attitude in previous sections of this study. All of these would be reflected in the student's work habits. Common research interest was also not surprising. It seems logical that students would examine the research interest of potential supervisors during the selection process. Given that graduate students increase research productivity (Milem, Berger & Dey, 2000) it also is logical that supervisors would select students based on common research interests.

The surprising difference here lies with personality. Students' mean score on the importance of personality was 4.63/5.00 indicating that overall supervisor personality

was very important. On the other hand, supervisors had a mean score of 2.59/5.00 on the importance scale, indicating that personality was not important in the decision to work together. This finding adds significant information to what students perceived as important in the supervisory relationship. Students first choose supervisors based on personality. However, once in the relationship, their needs shifted to structure and expertise. Supporting the importance of personality in the relationship are the results from the question on why students changed supervisors during their studies. Almost 50% of the students who changed supervisors did so because of a personality conflict. This was followed by change in research interest (18.5%). Given these results, personality should be examined in further detail as a method for matching students and supervisors in graduate education.

With respect to the other reasons for choosing to work together, both students and supervisors agreed that professional reputation was somewhat important, recommendations from other people (professors, students and graduate co-ordinators) were not important, and recruiting was neither important nor unimportant.

Conclusion

To conclude, the following section provides a brief summary of the major findings of this study.

The most important characteristics of the supervisory relationship in graduate education were identified and divided into supervisor characteristics, student characteristics and characteristics of supervision. Supervisor characteristics and characteristics of supervision were further grouped into one of two constructs. The first

was *Supervision Structure*, which was described in terms of the management and organization of the relationship and consisted of items measuring availability, accessibility, promptness, regular meetings, academic support, and encouragement. The second was *Supervisor Expertise* and consisted of items measuring guidance, feedback, knowledge and expectations. The supervisor's belief in the student's ability was associated with both constructs.

The most important student characteristics were not factor analyzed because of the small number of supervisors who provided the information. However the most highly rated characteristics on importance were student availability, time-management, organization, attitude, enthusiasm, willingness to seek new information and admit mistakes, and finally motivation.

In terms of why students and supervisors decided to work together, supervisors stated common research interest and the student's work habits as having the most influence in deciding to supervise a student. While students agreed with common research interests, they stated supervisor personality was the most important factor in choosing a supervisor.

Significant positive correlations were found between satisfaction with characteristics and: 1) the impact of those characteristics on the supervisory relationship, 2) the student's studies, and 3) final degree outcome. As satisfaction increased, the more favourable the impact and as satisfaction decreased, the more negative the impact. Supervisors perceived their availability (by email/phone/in person, discussing academic issues, and amount and length of meetings) as having a more favourable impact than did

students. Supervisors also perceived the guidance they provided on the proposal and thesis/dissertation more favourably than did students.

In general, supervisors were more satisfied with the supervisory relationship than were students. Student satisfaction with the supervisory relationship was positively correlated with their satisfaction with graduate education. A linear regression analysis found that for students, the supervisor's schedule (accommodating the demands of supervision) the supervisor's belief in the student's ability and the feedback provided on the thesis/dissertation accounted for unique variance in predicting overall satisfaction. For supervisors, it was the student's competence to undertake a research project that accounted for unique variance in predicting overall satisfaction.

In terms of demographic variables, female supervisors were more satisfied with student schedules, motivation and attitude than were male supervisors. Supervisors with 16 - 20 years of supervision experience were the least satisfied with student motivation and willingness to seek new information.

For students, the findings indicated that males were more satisfied than females with supervisor knowledge of the research topic and with letters of support. In terms of age, students over 50 were more satisfied with supervisor availability in terms of schedules and discussing academic issues. Students over 50 also perceived the impact of admitting their mistakes more favourably than younger students did.

Differences emerged between Faculties in this study. Specifically, students in Nursing and Medical Science were the most satisfied with supervisor availability, the supervisory relationship in general and graduate education. Students in Communication/Culture, and Science were the least satisfied with the supervisory

relationship and specifically with the supervisor's schedule. Social Work and Humanities students were the most satisfied with the supervisor's knowledge of the research topic, while students in Nursing, Kinesiology and Communication/Culture were the least satisfied with supervisor knowledge. Finally, students in Engineering were the most satisfied with the encouragement to apply for scholarships and with the letters of support written by the supervisor. Students in Communication/Culture were the least satisfied with these characteristics.

A significant relationship was found between overall satisfaction with the supervisory relationship and role modeling. However, findings did not indicate that the decision to pursue an academic career was influenced by the supervisory relationship. Furthermore, the findings did not indicate that completion times were influenced by the supervisory relationship.

In summary, this study provided evidence that a successful supervisory relationship is based on structure, expertise, belief in the student's ability, role modeling, and student attitudes and motivation. Both students and supervisors perceived the academic nature as being more important than the personal nature of the relationship.

Recommendations

The following section of this chapter presents a list of recommendations based on the results of this study. The first step in ensuring quality supervision is to identify behaviours that have demonstrated effectiveness. This study provides a record of both effective and ineffective supervisory characteristics as perceived by graduate students and supervisors. It therefore serves as a step towards finding an operational definition of

effective supervision. The study contributes to the overall understanding of research supervision and graduate education. It is therefore recommended that students, supervisors, graduate co-ordinators, Department Heads, Deans and other university administrators use the findings to ensure quality supervision for all students.

Specifically, the results provide the foundation for the development of instructional opportunities such as workshops and seminars to improve the quality of graduate education. The following recommendations could be used in setting up workshops or seminars for administrators, faculty members and graduate students.

- 1. Students and supervisors should be aware of such variables as availability, time management and organization. They need to provide each other with information on how and where they can be contacted. Both students and supervisors should be encouraged to work together to discuss expectations, and to set up a schedule of meetings in order to monitor progress.**
- 2. In terms of guidance, supervisors should help students with refining a research topic and provide students with guidelines on the appropriate length and format of a proposal and thesis, and guidelines on writing up and presenting their research. Workshops therefore should include the guidelines for each department and Faculty to ensure that supervisors are aware of the procedures.**
- 3. In terms of student schedules, perhaps more funding should be made available to ensure graduate students are not juggling full time work with their studies. Given that encouragement to apply for scholarships emerged as an important characteristic, graduate students should be informed of scholarship and funding opportunities and encouraged to apply for them. Supervisors should be given a list of the scholarships**

available to students in their department. Workshops could include this information or graduate co-ordinators could hold information sessions for both supervisors and students in their departments.

4. Given the list of important characteristics of graduate student supervision that emerged from this study, coupled with the most important reasons for agreeing to work together, students and supervisors should discuss research interest, work habits, expectations and responsibilities prior to agreeing to work together. Considering the importance students place on personality, these discussions could provide the opportunity to determine the degree to which the two personalities are compatible. Workshops for students and supervisors should included completing a learning style instrument. This would help departments match supervisors with prospective students.
5. In terms of student attitude, enthusiasm and motivation, it is suggested that individual departments plan graduate student functions to give students the opportunity to discuss their research and progress and to hear where other students are with their research. This may help them retain their enthusiasm and motivation and positive attitude. Students should be encouraged to make a plan for their research, which includes a timetable with achievable goals. In addition, students should plan a timetable for completing their program. Workshops should include information on 'what it means to be a graduate student' and the importance of doing independent research.
6. Workshops should also include information on conflict resolution. Given that personality conflict emerged as the number one reason for changing supervisors,

students and supervisors should be informed about the resources available in such situations. In addition, policies should be in place to ensure that students can discuss conflict in a safe environment without it impacting their reputation or progress.

7. University administrators should be informed about the impact of schedules and availability on the perceived quality of the supervisory relationship and graduate education. The results of this study indicate that the workload of faculty members should be reviewed to ensure a balance between the demands of supervision and the demands of other responsibilities within the three areas of research, teaching and service. During workshops, supervisors should be encouraged to organise their timetables and long range plans (2-3 years) and only agree to supervise the number of students they can balance with other responsibilities.

Limitations

The results of this study are encouraging in describing the quality and nature of the supervisory relationship in graduate education. However, as with all studies, there are limitations. Several limitations may lie with the sample itself. First, only students who were currently enrolled in a graduate program participated in the selection of the most important characteristics of the supervisory relationship. This was followed by a sample of those who had successfully completed their graduate degree participating in Phase Two of the study. As a result, the data may have been biased in that students who were enrolled and students who had completed may have had different perceptions of the relationship than students who had dropped out. With respect to supervisors, the data may also have been biased given that the supervisors who participated were generally

satisfied with the supervisory relationship. It would have been beneficial to examine the perceptions of supervisors who had not been satisfied.

An additional limitation with the sample is that although the response rate was good (40%) some Faculties were underrepresented leading to an unequal distribution of participants in each area. For example, only two students participated from each of the Faculties of Communication/Culture and Management making it impossible to generalize the findings to all students in those Faculties. In addition, certain Faculties were not represented at all, such as Fine Arts and Law. Students in those Faculties may have had different perceptions and therefore changed the results of the entire study. The same limitation exists with the supervisor sample. Again, while the response was good (35.5%), some faculties were not represented, hence excluding valuable perceptions from the study.

A third limitation with the sample exists with the supervisor sample size. The small number of supervisors did not permit a factor analysis to identify if there are underlying constructs of student characteristics, thus limiting the interpretation of the most important characteristics.

The selection method used to identify the most important characteristics may be a limitation. A mean criterion of 4.00/5.00 was used to select the most important characteristics, however the mean criterion was based on a sample of 20 participants (10 students and 10 supervisors). It was assumed that these 20 participants represented the opinions of all other graduate students and supervisors. A completely different group may have yielded different characteristics.

The retrospective nature of the study presented a limitation. Participants were asked to respond to questions about a relationship that may have occurred as much as six months in the past. Although this is not a long time, it may have had an effect on the perceptions of participants. It could be that what really happened and the perceptions of what happened differed. Perceptions are important, but they may not be true indicators of what actually occurred. Furthermore, supervisors had less variability than students did in their answers indicating that they may have remembered students less well than students remembered them.

The use of a survey also presents a limitation. Participants in the study may have idealized the nature of their relationship. That is, when asked on a 5-point Likert scale to interpret satisfaction with and impact of the characteristics, many may have given responses that reflected positive relationships. This may be particularly true of supervisors who tended to be more positive than students did. As a result, it is difficult to define successful supervision on the basis of the data available. Perhaps in-depth interviews with participants would have resulted in different results.

Finally, the lack of a role modeling subscale was a limitation in this study. Given the importance of role modeling in graduate supervision that emerged from this study, it would have been beneficial to measure role modeling with more than a single question.

Suggestion for Future Research

The present study contributes to our understanding of the quality and nature of the supervisory relationship in graduate education. However, much is to be uncovered and

the topic deserves further study. This section presents a list of suggestions for future research.

1. This study has identified the most important characteristics of the supervisory relationship. Future studies should cross-validate the list of characteristics to ensure their importance in graduate student supervision. It is also recommended that future studies ascertain the frequency with which such characteristics are actually implemented.
2. The results here are specific to graduate education; future studies should assess the applicability of these results to other contexts, such as undergraduate thesis (honours) supervision and clinical/field supervision. This will enable researchers to compare and contrast graduate supervision with other types of supervision.
3. The present study examined impact very generally in terms of effects on the supervisory relationship, the student's studies and/or final degree outcome. The nature of the 'impact' should be examined in more detail. At present, all that is known is whether the characteristic had a positive or negative impact on the relationship and/or the student's studies. It would be beneficial to know how the relationship was affected or how the student's studies were affected.
4. Longitudinal designs should be employed in the future to examine long term impact of the supervisory relationship. It would be beneficial to determine if the quality and nature of the relationship affects student careers, psychological well being and overall success in the long term.
5. Responses to the survey and open-ended questions indicated that both students and supervisor's schedules and other responsibilities had an effect on the relationship. To

- better understand the impact of other demands and responsibilities, it is recommended that specific data on these issues be collected. For supervisors, this should include the number of students they are supervising at any one time, the number of courses they are teaching while supervising, and any service or committee work in which they are engaged. For student's, the data should include marital status, number of dependants, outside work responsibilities, and financial information. In addition, with respect to schedules and availability, students and supervisors should be asked to interpret the meanings of "frequent" and "regular" meetings. This study showed that perceptions between the groups differed, however it could be that expectations were not realistic for one or both parties. For example, if a student expects several hours per week and the supervisor does not provide this time then the student will be dissatisfied. Several hours per week could be interpreted by supervisors as impossible to provide given their other responsibilities. In this case, student expectations may simply be too high.
6. Student attitude emerged as being very significant in the supervisory relationship. It is therefore recommended that future studies examine student attitude in more detail. Specifically, examining self-efficacy, happiness, enthusiasm, and motivation would contribute to the research on supervision.
 7. The results of this study indicated that less than 50% of those surveyed were planning an academic career. Given the concern about the future supply of academics, it is suggested that further research examine the career choices of graduate students and determine the variables that might influence decisions to pursue an academic career.

8. The present study found that supervisors were providing certain mentoring functions as described by Levinson et al (1978). It would be beneficial to include additional questions on students' perceptions of their supervisors as mentors.
9. Supervisors in the middle range of their careers were found to be less satisfied with certain characteristics. To better understand the reasons surrounding this, it is suggested that future research examine the career cycles of supervisors to determine the changes that occur during the middle stages of their careers.
10. The results here reflect the perceptions of only a small number of students in each Faculty. It is suggested that the study be repeated with a larger sample from each Faculty and Department so that stronger conclusions can be made regarding satisfaction with supervision and graduate education.

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Appendix A

Supervisory Relationships in Graduate Education

Phase 1: Letter to Students and Supervisors

Dear Prospective Participant:

I am completing a PhD in the Graduate Division of Educational Research at the University of Calgary under the supervision of Dr. Theresa Kline from the Department of Psychology. As part of my research, I will be interviewing/surveying graduate students and faculty members about the student-supervisor relationship in graduate education.

The purpose of the study is to identify the characteristics relevant to the perception of effective supervision. An instrument measuring the importance, the satisfaction and the impact of the characteristics within supervisory relationship dyads will be designed from the data collected in the interviews. Understanding both the nature of the relationship, and the roles and behaviors of both the supervisor and the student within the relationship are critical in attempting to find an operational definition of effective supervision. This in turn can have an impact on the quality of graduate education for all students. Your participation in this study will contribute to this outcome.

If you decide to participate in this study, your involvement will take no more than 60 minutes of your time. First, the researcher will interview/survey you about your experience with supervision. Second, you will be asked to rate the importance of certain characteristics that have been found to be relevant in the student/supervisor relationship in graduate education.

It should be noted that in no way would any information collected be linked to you. Your name will not be recorded on any data forms. You will be assigned a number and all information gathered will be coded according to that number. All data from the questions and the ratings of characteristics will be grouped together for analysis.

The risks involved in participation are no greater than those experienced in everyday life.

If you have any questions, comments or concerns please contact the researcher at 220-** or her supervisor, Dr. Theresa Kline at 220-****. You may also contact Mrs. Patricia Evans in Research Services at 220-****.**

If you agree to participate, please email the researcher at mtdrysdale@ucalgary.ca to arrange the interview.

Sincerely,

Maureen T. B. Drysdale, MSc

Appendix B***List of Supervisory Characteristics - Part 1***

Supervisor Characteristics	Very Unimportant '1'	Unimportant '2'	Neither Important nor Unimportant '3'	Important '4'	Very Important '5'
Accessible	1	2	3	4	5
Approachable	1	2	3	4	5
Active in Research	1	2	3	4	5
Attentive	1	2	3	4	5
Available	1	2	3	4	5
Caring	1	2	3	4	5
Competent	1	2	3	4	5
Collegial	1	2	3	4	5
Committed	1	2	3	4	5
Critical of Work	1	2	3	4	5
Gives Direction	1	2	3	4	5
Empathetic	1	2	3	4	5
Encouraging	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Expert in Field	1	2	3	4	5
Flexible	1	2	3	4	5
Friendly	1	2	3	4	5
Goal-oriented	1	2	3	4	5
Gives Guidance	1	2	3	4	5
Helpful	1	2	3	4	5
Influential	1	2	3	4	5
Knowledgeable	1	2	3	4	5
Motivated	1	2	3	4	5
Objective	1	2	3	4	5
Open to Ideas	1	2	3	4	5
Organized	1	2	3	4	5
Passive	1	2	3	4	5
Perceptive	1	2	3	4	5
Popular	1	2	3	4	5
Positive	1	2	3	4	5
Powerful	1	2	3	4	5
Prompt	1	2	3	4	5
Questioning	1	2	3	4	5
Specialist	1	2	3	4	5
Supportive	1	2	3	4	5
Time-managed	1	2	3	4	5
Trainer	1	2	3	4	5
Understanding	1	2	3	4	5
Warm	1	2	3	4	5
Common Research Interest	1	2	3	4	5
Gives Feedback	1	2	3	4	5

.....Part 2

List of Supervisory Characteristics - Part 2

Student Characteristics	Very Unimportant '1'	Unimportant '2'	Neither Important nor Unimportant '3'	Important '4'	Very Important '5'
Accessible	1	2	3	4	5
Attentive	1	2	3	4	5
Caring	1	2	3	4	5
Collegial	1	2	3	4	5
Committed	1	2	3	4	5
Competent	1	2	3	4	5
Accepts Criticism	1	2	3	4	5
Takes Direction	1	2	3	4	5
Empathetic	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Flexible	1	2	3	4	5
Friendly	1	2	3	4	5
Goal-oriented	1	2	3	4	5
Accepts Guidance	1	2	3	4	5
Accepts Help	1	2	3	4	5
Knowledgeable	1	2	3	4	5
Motivated	1	2	3	4	5
Objective	1	2	3	4	5
Open to Ideas	1	2	3	4	5
Organized	1	2	3	4	5
Passive	1	2	3	4	5
Perceptive	1	2	3	4	5
Positive	1	2	3	4	5
Prompt	1	2	3	4	5
Questioning	1	2	3	4	5
Time-managed	1	2	3	4	5
Understanding	1	2	3	4	5
Warm	1	2	3	4	5
Common Research Interest	1	2	3	4	5
Accepts Feedback	1	2	3	4	5

.....Part 3

List of Supervisory Characteristics - Part 3

Characteristics of Supervision	Very Unimportant	Unimportant	Neither Important nor Unimportant	Important	Very Important
	'1'	'2'	'3'	'4'	'5'
Flexible	1	2	3	4	5
Frequent Meetings during Course Work	1	2	3	4	5
Frequent Meetings during Proposal	1	2	3	4	5
Frequent Meetings during Candidacy	1	2	3	4	5
Frequent Meetings during Thesis	1	2	3	4	5
Organized	1	2	3	4	5
Positive	1	2	3	4	5
Safe	1	2	3	4	5
Stimulating	1	2	3	4	5
Structured	1	2	3	4	5
Time-managed	1	2	3	4	5

Appendix C**Supervisory Relationships in Graduate Education****Phase 1: Student Interview Questions****Student Questions**

1. Describe your experience as a supervisee and the characteristics that have made your supervisory relationship successful?
2. Based on your experience as a supervisee, how would you describe ineffective supervision?
3. Have your perceptions of supervision changed since you began your graduate education?
4. If you are planning an academic career, do you plan to supervise the way you were supervised?
5. Do you plan on maintaining a relationship with your supervisor after graduation?

Appendix D**Supervisory Relationships in Graduate Education****Phase 1: Supervisor Interview Questions****Supervisor Questions**

9. Describe your experience as a supervisor and the characteristics that have made your supervisory relationships successful?
9. Based on your experience as a supervisor, how would you describe ineffective supervision?
9. Have your perceptions of supervision changed since you first began supervising graduate students?
9. Where did your supervisory style come from?
9. Do you still maintain a relationship with your supervisor?
9. Do you maintain a relationship with your students once they graduate?
9. Does your department keep track of students after graduation?

Appendix E

Supervisory Relationships in Graduate Education Phase 1: Participant Informed Consent

This form confirms the consent of _____ to participate in the research project titled "The Quality and Nature of The Supervisory Relationship in Graduate Education: Student and Supervisor perceptions". This study will be conducted by Maureen Drysdale under the supervision of Dr. Theresa Kline in the Graduate Division of Educational Research.

I have been informed, to an appropriate level of understanding, about the purpose and methodology of this research project, the nature of my involvement, and any possible risks to which I may be exposed by virtue of my participation.

I agree to participate in this project by doing the following:

- ◆ Answer to the best of my ability several questions related to my experience of the student/supervisory relationship in graduate education.
- ◆ Rate the importance of the characteristics on the *List of Supervisory Characteristics*.

I understand and agree that:

- ◆ My participation is voluntary and I have the right to withdraw from this research at any time without penalty.
- ◆ The researcher has a corresponding right to terminate my participation in this research at any time.
- ◆ Participation or non-participation will have no effect on my position within my agency.
- ◆ All data will be kept in a secure place inaccessible to others.
- ◆ Disposition of the data will be carried out in the following manner:
 - Shredded when the project has been completed.
 - Audiotapes will be erased when the project is completed.
- ◆ Confidentiality will be assured through the assigning of numbers to each participant.
- ◆ Anonymity will be assured in the following manner:
 - Participants will not have to reveal their name during the interview.
 - Participants will not have to record their name on the *List of Supervisory Characteristics*.
- ◆ Data will be coded in such a way that I will not be identified.
- ◆ The risks involved in participating in this study are no greater than those experienced in everyday life.

I have read the consent form and I understand the nature of my involvement. I agree to participate within the above parameters. I understand that this research will be used for a dissertation and eventual publication in a scientific journal. I also understand that if I have any questions or comments, I may contact the researcher at 220-6736, her supervisor, Dr. Theresa Kline at 220-3469, or Mrs. Patricia Evans in Research Services at 220-3782.

Date: _____

Signature: _____

Appendix F**Means for Supervisory Characteristics -Part 1**

Supervisor Characteristic	Student Means (n = 10)	Supervisor Means (n = 6)	Total Means (n = 16)
Accessible	4.60	4.50	4.56
Approachable	3.50	3.16	3.63
Active in Research	3.60	3.83	3.68
Attentive	3.60	3.16	3.43
Available	4.50	4.33	4.44
Caring	3.10	3.16	3.13
Competent	3.70	3.83	3.75
Collegial	4.20	3.66	3.81
Committed	3.50	3.83	3.63
Critical of Work	3.20	3.83	3.56
Gives Direction	3.60	3.50	3.56
Empathetic	3.60	3.50	3.56
Encouraging	4.50	4.50	4.50
Enthusiastic	4.30	4.33	4.31
Expert in Field	2.80	3.66	3.12
Flexible	3.50	3.33	3.43
Friendly	3.90	3.16	3.62
Goal-oriented	3.50	3.16	3.37
Gives Guidance	4.50	4.16	4.37
Helpful	4.60	4.33	4.50
Influential	2.30	3.00	2.56
Knowledgeable	4.40	4.67	4.50
Motivated	3.70	3.83	3.75
Objective	3.70	3.66	3.69
Open to Ideas	4.70	4.33	4.56
Organized	3.40	3.16	3.31
Passive	1.30	2.16	1.62
Perceptive	3.80	3.33	3.62
Popular	1.50	2.50	1.87
Positive	3.90	3.66	3.81
Powerful	1.50	3.50	2.12
Prompt	4.20	4.16	4.18
Questioning	3.80	3.83	3.81
Specialist	2.70	3.16	2.87
Supportive	4.90	3.33	4.31
Time-managed	3.10	3.16	3.31
Trainer	2.20	2.83	2.44
Understanding	4.20	3.16	3.62
Warm	3.60	2.50	3.18
Common Research Interest	2.60	4.50	3.31
Gives Feedback	4.30	4.33	4.31

.....con't

Means for Supervisory Characteristics -Part 2

Student Characteristic	Student Means (n = 10)	Supervisor Means (n = 6)	Total Means (n = 16)
Accessible	4.40	3.66	4.12
Attentive	3.90	3.50	3.75
Caring	3.50	2.16	3.00
Competent	4.20	4.33	4.25
Collegial	3.40	3.50	3.68
Committed	3.90	3.83	3.87
Accepts Criticism	4.10	4.33	4.18
Takes Direction	3.20	3.83	3.43
Empathetic	3.10	2.83	3.00
Enthusiastic	3.90	4.50	4.13
Flexible	3.20	3.83	3.56
Friendly	3.70	3.16	3.25
Goal-oriented	3.80	3.83	3.81
Accepts Guidance	3.90	3.66	3.87
Accepts Help	3.60	3.66	3.63
Knowledgeable	4.00	4.16	4.06
Motivated	4.40	4.83	4.60
Objective	3.90	3.16	3.43
Open to Ideas	4.50	4.16	4.37
Organized	4.20	4.33	4.25
Passive	1.40	1.83	1.56
Perceptive	3.70	3.66	3.69
Positive	4.10	4.33	4.18
Prompt	3.80	3.66	3.75
Questioning	4.20	4.16	4.18
Time-managed	3.90	4.50	4.12
Understanding	3.90	3.50	3.75
Warm	3.50	2.33	3.06
Common Research Interest	3.20	4.66	3.75
Accepts Feedback	4.20	4.00	4.12

Means for Supervisory Characteristics -Part 3

Characteristic of Supervision	Student Means (n = 10)	Supervisor Means (n = 6)	Total Means (n = 16)
Flexible	3.00	3.16	3.06
Frequent Meetings during Course Work	2.70	2.33	2.56
Frequent Meetings during Proposal	4.10	4.17	4.13
Frequent Meetings during Candidacy	4.10	4.17	4.13
Frequent Meetings during Thesis	4.40	4.33	4.38
Organized	4.00	4.16	4.06
Positive	3.60	3.50	3.56
Safe	3.90	3.33	3.43
Stimulating	3.40	3.33	3.37
Structured	3.20	3.66	3.37
Time-managed	3.40	3.50	3.44

Appendix G

Supervisory Relationships in Graduate Education

Pilot Test: Letter to Supervisors

Dear Prospective Participant:

I am completing a PhD in the Graduate Division of Educational Research at the University of Calgary under the supervision of Dr. Theresa Kline from the Department of Psychology. As part of my research, I will be surveying graduate students and their supervisors about the student-supervisor relationship in graduate education.

The purpose of the study is to identify the characteristics relevant to the perception of effective supervision. Understanding both the nature of the relationship, and the roles and behaviors of both the supervisor and the student within the relationship are critical in attempting to find an operational definition of effective supervision. This in turn can have an impact on the quality of graduate education for all students. Your participation in this study will contribute to this outcome.

At this time, I am looking for participants to complete the survey as part of a pilot test. If you decide to participate, your involvement should take no more than 45 minutes of your time. You will be asked to complete a survey called the *Graduate Supervisory Relationship Scale - Form A*.

It should be noted that in no way would any information collected be linked to you. Your name will not be recorded on any forms. All collected data from the surveys will be grouped together for analysis.

The risks involved in participation are no greater than those experienced in everyday life.

If you have any questions, comments or concerns please contact the researcher at 220-**** or her supervisor, Dr. Theresa Kline at 220-****. You may also contact Mrs. Patricia Evans in Research Services at 220-****.

A consent form is attached if you are in agreement to participate. Please complete both copies of the consent form. Retain one copy for your records.

Sincerely,

Maureen T. B. Drysdale, MSc

Appendix H

Supervisory Relationships in Graduate Education

Pilot Test: Letter to Students

Dear Prospective Participant:

I am completing a PhD in the Graduate Division of Educational Research at the University of Calgary under the supervision of Dr. Theresa Kline from the Department of Psychology. As part of my research, I will be surveying graduate students and their supervisors about the student-supervisor relationship in graduate education.

The purpose of the study is to identify the characteristics relevant to the perception of effective supervision. Understanding both the nature of the relationship, and the roles and behaviors of both the supervisor and the student within the relationship are critical in attempting to find an operational definition of effective supervision. This in turn can have an impact on the quality of graduate education for all students. Your participation in this study will contribute to this outcome.

At this time, I am looking for participants to complete the survey as part of a pilot test. If you decide to participate, your involvement should take no more than 45 minutes of your time. You will be asked to complete a survey called the *Graduate Supervisory Relationship Scale - Form B*.

It should be noted that in no way would any information collected be linked to you. Your name will not be recorded on any forms. All collected data from the surveys will be grouped together for analysis.

The risks involved in participation are no greater than those experienced in everyday life.

If you have any questions, comments or concerns please contact the researcher at 220-**** or her supervisor, Dr. Theresa Kline at 220-****. You may also contact Mrs. Patricia Evans in Research Services at 220-****.

A consent form is attached if you are in agreement to participate. Please complete both copies of the consent form. Retain one copy for your records.

Sincerely,

Maureen T. B. Drysdale, MSc

Appendix I

Supervisory Relationships in Graduate Education

Pilot Test: Participant Informed Consent

This form confirms the consent of _____ to participate in a pilot test for the research project titled "The Quality and Nature of The Supervisory Relationship in Graduate Education: Student and Supervisor perceptions". This study will be conducted by Maureen Drysdale under the supervision of Dr. Theresa Kline in the Graduate Division of Educational Research.

I have been informed, to an appropriate level of understanding, about the purpose and methodology of this research project, the nature of my involvement, and any possible risks to which I may be exposed by virtue of my participation.

I agree to participate in this project by doing the following:

- ◆ Complete to the best of my ability the *Graduate Supervisory Relationship Scale*.

I understand and agree that:

- ◆ My participation is voluntary and I have the right to withdraw from this research at any time without penalty.
- ◆ The researcher has a corresponding right to terminate my participation in this research at any time.
- ◆ Participation or non-participation will have no effect on my position within my agency.
- ◆ All data will be kept in a secure place inaccessible to others.
- ◆ Disposition of the data will be carried out in the following manner:
 - Shredded when the project has been completed or in seven years if I consent to a follow-up study.
- ◆ Confidentiality will be assured through the assigning of numbers to each participant.
- ◆ Anonymity will be assured in the following manner:
 - Participants will not have to record their name on the *Graduate Supervisory Relationship Scale*.
- ◆ Data will be coded in such a way that I will not be identified.
- ◆ The risks involved in participating in this study are no greater than those experienced in everyday life.

I have read the consent form and I understand the nature of my involvement. I agree to participate within the above parameters. I understand that this research will be used for a dissertation and eventual publication in a scientific journal. I also understand that if I have any questions or comments, I may contact the researcher at 220-****, her supervisor, Dr. Theresa Kline at 220-****, or Mrs. Patricia Evans in Research Services at 220-****.

Date: _____

Signature: _____

Appendix J: Graduate Supervisory Relationship Scale – Form A: Supervisors

PART A: SUPERVISOR INFORMATION and GENERAL INFORMATION ABOUT THE SUPERVISORY RELATIONSHIP

1. Participant Number: _____
2. Gender: Male Female
3. Age: <30 31-35 36-40 41-45 46-50 51-55 56-60 61-65 >66
4. Position: Assistant Professor Associate Professor Full Professor Emeritus Adjunct
5. Faculty/Department: _____
6. Years supervising graduate students: <5 6-10 11-15 16-20 21-25 26-30 >30
7. Did you have any choice in supervising THIS STUDENT? Yes No (No choice, student was assigned upon admission)

*Note: If you answered "No" to question 7, then proceed to question 9.

8. If Yes to question 7, how important was each of the following in your decision to supervise THIS STUDENT?

	Very Unimportant '1'	Unimportant '2'	Neither Important nor Unimportant '3'	Important '4'	Very Important '5'
Common research interest	1	2	3	4	5
Student's past research and academic experience	1	2	3	4	5
Student's work habits	1	2	3	4	5
Recommendation from another professor	1	2	3	4	5
Recommendation from graduate co-ordinator	1	2	3	4	5
Recruited by student	1	2	3	4	5
Personality	1	2	3	4	5
Other: (describe)	1	2	3	4	5

9. Overall, how satisfied are you with your supervisory experience with THIS STUDENT?

- Very Satisfied
- Satisfied
- Neither Satisfied nor Dissatisfied
- Dissatisfied
- Very Dissatisfied

PART B: SUPERVISORY CHARACTERISTICS AND CHARACTERISTICS OF SUPERVISION

For each of the following statements, please rank the following:

- a) What **IMPACT** you believe this characteristic had on your relationship with this student, his/her studies and/or their final degree outcome.

Characteristic	What IMPACT did this characteristic have on your relationship with this student, his/her studies and/or their final degree outcome?				
	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
My availability to this student (by phone, email, or in person)	1	2	3	4	5
My promptness in returning messages to this student	1	2	3	4	5
The expectations I discussed at the beginning of this student's program	1	2	3	4	5
My schedule could accommodate the demands of supervising this student	1	2	3	4	5
My availability to discuss academic issues with this student	1	2	3	4	5
My support of this student's academic problems	1	2	3	4	5
My belief in this student's ability	1	2	3	4	5
The guidance I provided on this student's research topic	1	2	3	4	5
The guidance I provided on this student's research proposal	1	2	3	4	5
The guidance I provided on this student's thesis/dissertation	1	2	3	4	5
The amount of constructive criticism/feedback I provided on the quality of this student's research proposal	1	2	3	4	5
The amount of constructive criticism/feedback I provided on the quality of this student's thesis/dissertation	1	2	3	4	5
I was open to ideas about the direction of this student's research	1	2	3	4	5

Characteristic	What IMPACT did this characteristic have on this student, his/her studies and/or their final degree outcome?				
	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
My knowledge of this student's research topic	1	2	3	4	5
The encouragement I gave this student to apply for scholarships	1	2	3	4	5
The letters of support I wrote on behalf of this student (e.g., scholarships, career opportunities)	1	2	3	4	5
Regular meetings were held with this student during proposal generation/writing stages	1	2	3	4	5
Scheduled meetings with this student were of adequate length to accomplish necessary tasks	1	2	3	4	5

PART C: STUDENT CHARACTERISTICS

For each of the following statements, please rank the following:

- How **SATISFIED** you were with the listed characteristic in your student/supervisor relationship.
- What **IMPACT** the characteristic had on your relationship with this student, his/her studies and/or their final degree outcome.

Characteristic	How SATISFIED were you with this characteristic in your own student/supervisor relationship?					What IMPACT did this characteristic have on your relationship with this student, his/her studies and/or their final degree outcome?				
	'1' Very Dissatisfied	'2' Dissatisfied	'3' Neither Satisfied nor Dissatisfied	'4' Satisfied	'5' Very Satisfied	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
Student was easily accessible (by phone, email, or in person)	1	2	3	4	5	1	2	3	4	5
Students schedule could accommodate the demands of graduate school	1	2	3	4	5	1	2	3	4	5

Characteristic	How SATISFIED were you with this characteristic in your own student/supervisor relationship?					What IMPACT did this characteristic have on your relationship with this student, his/her studies and/or their final degree outcome?				
	'1' Very Dissatisfied	'2' Dissatisfied	'3' Neither Satisfied nor Dissatisfied	'4' Satisfied	'5' Very Satisfied	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
Student's ability to meet appropriate deadlines	1	2	3	4	5	1	2	3	4	5
The respect this student had for my privacy on personal issues	1	2	3	4	5	1	2	3	4	5
Student's enthusiasm about their research	1	2	3	4	5	1	2	3	4	5
Student's attitude about their studies	1	2	3	4	5	1	2	3	4	5
Student's competence to undertake a research project	1	2	3	4	5	1	2	3	4	5
Student's willingness to seek new information by reading additional resources	1	2	3	4	5	1	2	3	4	5
Student's willingness to share authorship on joint projects	1	2	3	4	5	1	2	3	4	5
Student's motivation to complete their program on time	1	2	3	4	5	1	2	3	4	5
Student's willingness to admit mistakes	1	2	3	4	5	1	2	3	4	5

PART D: OPEN QUESTIONS

- a) What characteristics do you feel were the most important in your supervisory relationship with this student?
- b) Was there anything NOT mentioned in this survey that had a negative impact on your supervisor relationship with this student? Explain.
- c) Who and/or what do you believe contributed the most to the success of this student's program?

Appendix K:**Graduate Supervisory Relationship Scale – Form B: Students****PART A: STUDENT INFORMATION and GENERAL INFORMATION ABOUT THE SUPERVISORY RELATIONSHIP**

1. Participant Number: _____
2. Gender: Male Female
3. Age: <25 26-30 31-35 36-40 41-45 46-50 > 50
4. Degree: Masters PhD
5. Faculty/Department: _____
6. Area of Specialization: _____
7. Years to Complete Program: <2 2 3 4 5 6 7 >7
8. Citizenship: Canadian Landed Immigrant Visa Student
9. Did you have a choice in who supervised you? Yes No (No choice, supervisor was assigned upon admission)

*Note: If you answered "No" to question 9, then proceed to question 11.

10. If Yes to question 9, how important was each of the following in choosing your supervisor?

	Very Unimportant '1'	Unimportant '2'	Neither Important nor Unimportant '3'	Important '4'	Very Important '5'
Common research interest	1	2	3	4	5
Supervisor's professional reputation	1	2	3	4	5
Supervisor's work habits	1	2	3	4	5
Recommendation from another graduate student	1	2	3	4	5
Recommendation from another professor	1	2	3	4	5
Recommendation from graduate co-ordinator	1	2	3	4	5
Recruited by supervisor	1	2	3	4	5
Personality	1	2	3	4	5
Other: (describe) _____	1	2	3	4	5

11. If you changed supervisors during your program, what was the number ONE reason for doing so? CHOOSE ONE ONLY

- | | | | |
|---|--------------------------|----------------------|--|
| Change in research interest | <input type="checkbox"/> | Personality conflict | <input type="checkbox"/> |
| Could not meet supervisor's expectations | <input type="checkbox"/> | Sexual harassment | <input type="checkbox"/> |
| Supervisor could not meet my professional needs | <input type="checkbox"/> | Other: | <input type="checkbox"/> (describe: _____) |
| Conflict over authorship/ownership of research | <input type="checkbox"/> | Not Applicable | <input type="checkbox"/> |
| Supervisor moved or went on sabbatical | <input type="checkbox"/> | | |

12. Do you consider your supervisor to be a positive role model for you? Yes No
13. At this time, are you planning to pursue an academic career? (e.g. college or university professor) Yes No
14. Did your supervisory relationship influence the decision to pursue or not pursue an academic career? Yes No
15. Overall, how satisfied are you with your supervisory experience?
- Very Satisfied
 - Satisfied
 - Neither Satisfied nor Dissatisfied
 - Dissatisfied
 - Very Dissatisfied
16. Overall, how satisfied are you with your graduate education?
- Very Satisfied
 - Satisfied
 - Neither Satisfied Nor Dissatisfied
 - Dissatisfied
 - Very Dissatisfied

PART B: SUPERVISORY CHARACTERISTICS AND CHARACTERISTICS OF SUPERVISION

For each of the following statements, please rank the following:

- b) How **SATISFIED** you were with the listed characteristic in your student/supervisor relationship.
- c) What **IMPACT** the characteristic had on you, your relationship with your supervisor, your studies and/or the final degree outcome.

Characteristic	How SATISFIED were you with this characteristic in your own student/supervisor relationship?					What IMPACT did this characteristic have on you, your relationship with your supervisor, your studies and/or the final degree outcome?				
	'1' Very Dissatisfied	'2' Dissatisfied	'3' Neither Satisfied nor Dissatisfied	'4' Satisfied	'5' Very Satisfied	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
Supervisor was easily accessible (by phone, email or in person)	1	2	3	4	5	1	2	3	4	5
Supervisor returned messages promptly	1	2	3	4	5	1	2	3	4	5
Supervisor discussed expectations at the beginning of my program	1	2	3	4	5	1	2	3	4	5
Supervisor's schedule could accommodate the demands of supervision	1	2	3	4	5	1	2	3	4	5
Supervisor was available to discuss academic issues	1	2	3	4	5	1	2	3	4	5

Characteristic	How SATISFIED were you with this characteristic in your own student/supervisor relationship?					What IMPACT did this characteristic have on you, your relationship with your supervisor, your studies and/or the final degree outcome?				
	'1' Very Dissatisfied	'2' Dissatisfied	'3' Neither Satisfied nor Dissatisfied	'4' Satisfied	'5' Very Satisfied	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
Supervisor was supportive of my academic problems	1	2	3	4	5	1	2	3	4	5
Supervisor believed in my ability	1	2	3	4	5	1	2	3	4	5
Supervisor provided guidance on my research topic	1	2	3	4	5	1	2	3	4	5
Supervisor provided guidance on research proposal writing	1	2	3	4	5	1	2	3	4	5
Supervisor provided guidance on thesis/dissertation writing	1	2	3	4	5	1	2	3	4	5
Supervisor provided constructive criticism/feedback on the quality of my research proposal	1	2	3	4	5	1	2	3	4	5
Supervisor provided constructive criticism/feedback on the quality of my thesis/dissertation	1	2	3	4	5	1	2	3	4	5
Supervisor was open to ideas about the direction of my research	1	2	3	4	5	1	2	3	4	5
Supervisor was knowledgeable about my research topic	1	2	3	4	5	1	2	3	4	5
Supervisor encouraged me to apply for scholarships	1	2	3	4	5	1	2	3	4	5
Supervisor wrote letters of support for me (e.g. scholarships, career opportunities)	1	2	3	4	5	1	2	3	4	5
Regular meetings were scheduled during proposal generation/writing stages	1	2	3	4	5	1	2	3	4	5
Scheduled meetings were of adequate length to accomplish necessary tasks	1	2	3	4	5	1	2	3	4	5

PART C: STUDENT CHARACTERISTICS

For each of the following statements, please rank the following:

- a) **What IMPACT the characteristic had on you, your relationship with your supervisor, your studies and/or the final degree outcome.**

Characteristic	What IMPACT did this characteristic have on you, your relationship with your supervisor, your studies and/or the final degree outcome?				
	'1' Very Negative Impact	'2' Negative Impact	'3' No Impact	'4' Positive Impact	'5' Very Positive Impact
My availability to my supervisor (by phone, email, or in person)	1	2	3	4	5
My personal schedule could accommodate the demands of graduate school	1	2	3	4	5
My ability to meet appropriate deadlines	1	2	3	4	5
The respect I had for my supervisor's privacy on personal issues	1	2	3	4	5
My enthusiasm about my research	1	2	3	4	5
My attitude about my studies	1	2	3	4	5
My competence to undertake a research project	1	2	3	4	5
My willingness to seek new information by reading additional resources	1	2	3	4	5
My willingness to share authorship with my supervisor on joint projects	1	2	3	4	5
My motivation to complete my program on time	1	2	3	4	5
My willingness to admit my mistakes	1	2	3	4	5

PART D: OPEN QUESTIONS

- a) **What characteristics do you feel were the most important in your student/supervisor relationship?**
- b) **Was there anything NOT mentioned in this survey that had a negative impact on your student/supervisor relationship? Explain.**
- c) **Who and/or what contributed the most to the success of your program?**

Appendix L

Supervisory Relationships in Graduate Education Phase 2: Letter to Students

Dear Prospective Participant:

I am completing a PhD in the Graduate Division of Educational Research at the University of Calgary under the supervision of Dr. Theresa Kline from the Department of Psychology. As part of my research, I will be surveying graduate students and their supervisors about the student-supervisor relationship in graduate education.

The purpose of the study is to identify the characteristics relevant to the perception of effective supervision. Understanding both the nature of the relationship, and the roles and behaviors of both the supervisor and the student within the relationship are critical in attempting to find an operational definition of effective supervision. This in turn can have an impact on the quality of graduate education for all students. Your participation in this study will contribute to this outcome.

If you decide to participate in this study, your involvement will take no more than 15 minutes of your time. You will be asked to complete a survey called the *Graduate Supervisory Relationship Scale - Form B*. Please refer to the instructions provided for completing the survey.

It should be noted that in no way would any information collected be linked to you. Your name will not be recorded on any forms. You will be assigned a number and all information gathered will be coded according to that number. All collected data from the surveys will be grouped together for analysis.

The risks involved in participation are no greater than those experienced in everyday life.

There is also the possibility that you may be contacted in five years to participate in a follow-up study to examine supervision and career outcomes. Participation would be similar to the present study, in that you would be required to complete a survey. By agreeing to participate in the present study, you are not obligated to participate in a follow-up. If you agree to participate in a follow-up, the data collected in this study will be securely stored for up to seven years. If you do not agree to participate in the follow-up, the data will be destroyed after the completion of the present project.

If you have any questions, comments or concerns please contact the researcher at 220-6736 or her supervisor, Dr. Theresa Kline at 220-3469. You may also contact Mrs. Patricia Evans in Research Services at 220-3782.

A consent form is attached if you are in agreement to participate. Please complete both copies of the consent form. Retain one copy for your records and return the second with the completed survey by December 1st, 2000. Please return completed forms in the envelope provided.

Sincerely,

Maureen T. B. Drysdale, PhD (c)

Appendix M

Supervisory Relationships in Graduate Education

Phase 2: Participant Informed Consent

This form confirms the consent of _____ to participate in the research project titled "The Quality and Nature of The Supervisory Relationship in Graduate Education: Student and Supervisor perceptions". This study will be conducted by Maureen Drysdale under the supervision of Dr. Theresa Kline in the Graduate Division of Educational Research.

I have been informed, to an appropriate level of understanding, about the purpose and methodology of this research project, the nature of my involvement, and any possible risks to which I may be exposed by virtue of my participation.

I agree to participate in this project by doing the following:

- Complete to the best of my ability the *Graduate Supervisory Relationship Scale*.

I understand and agree that:

- ◆ My participation is voluntary and I have the right to withdraw from this research at any time without penalty.
- ◆ The researcher has a corresponding right to terminate my participation in this research at any time.
- ◆ Participation or non-participation will have no effect on my position within my agency.
- ◆ All data will be kept in a secure place inaccessible to others.
- ◆ Disposition of the data will be carried out in the following manner:
 - Shredded when the project has been completed or in seven years if I consent to a follow-up study.
- ◆ Confidentiality will be assured through the assigning of numbers to each participant.
- ◆ Anonymity will be assured in the following manner:
 - Participants will not have to record their name on the *Graduate Supervisory Relationship Scale*.
- ◆ Data will be coded in such a way that I will not be identified.
- ◆ The risks involved in participating in this study are no greater than those experienced in everyday life.

I have read the consent form and I understand the nature of my involvement. I agree to participate within the above parameters. I understand that this research will be used for a dissertation and eventual publication in a scientific journal. I also understand that if I have any questions or comments, I may contact the researcher at 220-6736, her supervisor, Dr. Theresa Kline at 220-3469, or Mrs. Patricia Evans in Research Services at 220-3782.

Date: _____

Signature: _____

cont'd

- ◆ I have been informed that I may be contacted for a follow-up study in five years.
- ◆ I understand that I will be required to complete a survey at that time.
- ◆ I understand that if I consent to a follow-up study, the data will be secured in a locked filing cabinet for seven years at which time it will be destroyed.
- ◆ I understand that if I decline participation in a follow-up study, the data collected from me in the present study will be destroyed at the completion of this project.
- ◆ I understand that any subsequent use of the data from this project will conform to the above parameters.
- ◆ I understand that participation in a follow-up study will be in accordance with the guidelines set forth by the Education Joint Ethics Committee at the University of Calgary.

I understand the nature of my involvement in a follow-up study to be conducted in five years. I agree to participate within the above parameters.

Date: _____

Signature: _____

I understand the nature of my involvement in a follow-up study to be conducted in five years. I **do not** agree to participate within the above parameters and thereby request that the data collected from me be destroyed at the completion of the present study.

Date: _____

Signature: _____

Appendix N

Supervisory Relationships in Graduate Education Phase 2: Letter to Supervisors

Dear Dr. _____

I am completing a PhD in the Graduate Division of Educational Research at the University of Calgary under the supervision of Dr. Theresa Kline from the Department of Psychology. As part of my research, I will be surveying graduate students and their supervisors about the student-supervisor relationship in graduate education.

The purpose of the study is to identify the characteristics relevant to the perception of effective supervision. Understanding both the nature of the relationship, and the roles and behaviors of both the supervisor and the student within the relationship are critical in attempting to find an operational definition of effective supervision. This in turn can have an impact on the quality of graduate education for all students. Your participation in this study will contribute to this outcome.

You have been asked to participate because one or more of your students have consented and completed the student portion of the survey. When examining student-supervisor dyads, it is essential to have both the student and the supervisor participate. Your participation would complete the dyad information and contribute to the outcome of this study. If you decide to participate, your involvement will take no more than 15 minutes of your time. You will be asked to complete a survey called the *Graduate Supervisory Relationship Scale - Form A*.

It should be noted that in no way would any information collected be linked to you. You will be assigned a number and all information gathered will be coded according to that number. All collected data from the surveys will be grouped together for analysis.

The risks involved in participation are no greater than those experienced in everyday life.

There is also the possibility that you may be contacted in five years to participate in a follow-up study to examine supervision and career outcomes. Participation would be similar to the present study, in that you would be required to complete a survey. By agreeing to participate in the present study, you are not obligated to participate in a follow-up study. If you agree to participate in a follow-up, the data collected will be securely stored for up to seven years. If you do not agree to participate in the follow-up, the data will be destroyed after the completion of the project.

If you have any questions, comments or concerns please contact the researcher at 220-6736 or her supervisor, Dr. Theresa Kline at 220-3469. You may also contact Mrs. Patricia Evans in Research Services at 220-3782.

A consent form is attached if you are in agreement to participate. Please complete both copies of the consent form. Retain one copy for your records and return the second with the completed surveys by January 19th, 2001. Please return completed forms in the envelope provided.

Sincerely,

Maureen T. B. Drysdale, MSc